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EDUCATIONAL REVIEW

JANUARY, 1892.

I.

A CRITIQUE OF EDUCATIONAL VALUES.

The article on "The Educational Value of College Studies," by Professor Patten, which appeared in the EDUCATIONAL REVIEW for February, 1891, is so sound in many of its positions and so interesting and suggestive throughout, that it may seem almost invidious to write in opposition to the views therein expressed; and yet the very ability of the article is, perhaps, a reason why its mistaken opinions should be controverted. Especially is this true if, as it appears, those opinions are such that they would, if generally received, prove a real hindrance to the progress of educational science and practice; and false opinions on such a subject might readily lead to a revision of college studies that would prove very injurious.

With the purpose of college life and college studies as interpreted by Professor Patten, whatever some so-called practical-minded parents may think, all progressive teachers will in the main agree. Professor Patten well says: "The educational value lies not in the knowledge imparted, but in the effect upon the student. It gives him a better capacity for work, a faculty to do other work of a like character, purer ideas of life, greater confidence in his intellect, and keener appreciation of his moral obligations." To all this everyone will give the heartiest assent. I find myself also in full accord with the nature of his dissent from those whom he calls the "thinkers of the old school," when he says: "I agree heartily with the thinkers of the old school in desiring to keep the college course a culture course. I differ with them, how-

ever, by thinking that certain parts of the new sciences contain elements that have as great an educational value as that of the old studies which they displaced." But it is when he attempts to fix these elements of educational values, and especially when he tells upon what these values depend, that he is, in my judgment, at fault. I wish to touch first upon the method of teaching a subject as determining its educational value, for unless Professor Patten's article is misleading in this regard, he greatly underestimates this factor. He may have purposely omitted the discussion of this point for want of space; but, if so, he should have warned us. His article leads one to think that he considers it of relatively little importance.

To be sure, in one or two places in the article, he seems to believe that the educational value of a study depends upon the way in which it is taught. Yet he lays special stress upon content, with the various modifications brought in by "the inherited qualities of the college student, the life the student is to lead, and the judgments he must most commonly make, the state of progress of the science—whether inductive, deductive, or transitional, and the character of the premises of the science and the confidence the student has in them," besides some other minor factors that he does not deem of sufficient consequence to mention. He even says, on page 110, "All studies are utility studies or culture studies, according to the manner in which they are taught"; but so much emphasis is laid upon the other points mentioned, and so little upon method, that one is led to believe that he thinks the manner of teaching to be of secondary inportance. It is, perhaps, not too extreme to say—regarding college studies at least—that so far as educational value goes, the manner of teaching is of more consequence than the subjects taught. It is certainly a fact that a student who devotes four years to any one language and to the deductive science, physics, alone—if both are taught as they are taught by the best professors—will receive more culture, in Professor Patten's sense of that word, than he would from Professor Patten's ideal curriculum, with its full quota of the moral sciences, if taught as they have been

taught in many of our schools and colleges, by the poorer teachers. It seems necessary to make this point emphatic,—and my difference from Professor Patten's opinion here, while, I think, great, is after all only one of emphasis,—because the other view, if it were believed, might well lead one to underestimate his influence if he happened to be a teacher of some of the deductive sciences, and thus to encourage poorer teaching than we have at present. Moreover, it is doubtless true that, in selecting teachers for our colleges and universities, far too little stress is laid upon this qualification of aptness for teaching. It would be unfortunate if this tendency were to become more marked. It will be seen, too, that this view of the importance of the manner of teaching a subject, if the right one, leads to entirely different results on other points from those reached by Professor Patten.

We learn from his article that "the educational value of a science depends upon the stage of its progress"; and in fact the main contention of the article seems to be that we must depend upon the sciences that are in the inductive stage—or, better yet, that are in "the transitional stage from induction to deduction"—if we wish to get the best educational results; because a science in that stage best stimulates the self-activity of the student, and because, also, "the sciences that are in a state of transition have the great men and the enthusiastic teachers." To take up the second reason first, I should be willing to agree that only investigators can be or are great teachers; but I can see no reason for thinking that when a science has reached the stage of having a number of general principles from which one may reason, it still presents no further field for investigation. It may be true that investigation will take a different character, and that the word investigator will have a somewhat different meaning. A man who goes into an unfrequented region, and looks carefully about him, may perhaps discover a new species of plant or insect, and such a man may be called an investigator; nevertheless, that kind of investigation, if it ends with that, will hardly justify us in concluding that the said investigator is to be classed with

Charles Darwin, or that he is a great scientist, or will be a great teacher. It is probably true that the more completely developed sciences offer a narrower field for investigators of that class; but one of the excellent qualities of good Mother Nature is that she has always new secrets in all fields for man to discover; and it is certainly usually true that advance in any line simply opens up wider vistas of unexplored territory to still lure investigators on. If so, why should there not be great men and great teachers in all sciences? Do mathematicians or physicists lack enthusiasm because they cannot extend their sciences? This question of great men, too, in any field of research, is one of fact, upon which there may be varying opinions. Professor Patten considers physics a deductive science now—*ergo*, there should be, relatively speaking, few great men in physics to-day, and, relatively speaking, few great teachers. I have to place in opposition to this the opinion of the professor of physics in one of our great universities, who expresses himself on this subject as follows: "It is true that the names most often met with in the study of science are the names of workers in the inductive stages of the science, because we read principally of the men who have established the general principles; but it is not necessarily true that these men are the greatest men in that particular science. In physics, some of the very greatest names are among the men who did not work inductively. Newton, Cavendish, Maxwell, Sir William Thomson, Lord Rayleigh, are men among the English physicists alone who rank among the first, and who (with the exception of Cavendish) are noted for their deductive work almost entirely." Professor Patten might say that it was not so much the method of work as the degree of development of the science that brought about the result. This point is met as follows: "The last fifty years can show the greatest list of physicists of any like period in the history of the science, and it is doubtful if any generation could compare with the present in its list of great names in the science. True it is that the present generation is much more celebrated for its physicists than chemists." I have not at hand

the opinion of an expert in mathematics, but my own opinion would not be materially different as to that science; and it might fairly be asked—if it were likely to lead to any definite conclusion—if the great names of to-day in physics and mathematics do not deserve to be placed on a par with those in biology, or even in political economy or history. If we write the names of Helmholtz and Sylvester with those of Virchow and Wagner and Ranke—to name none of our own great men in any of these lines—he will be a bold man who will venture to place one below the others. Rather must we agree with Victor Hugo that among geniuses all are equal. Even if I were to attempt to disprove Professor Patten's contention by an appeal to numbers of great men or of great teachers in the different sciences, we should doubtless find that no one could eliminate the personal equation; that good men were plentiful in all fields, while the great men were woefully scarce in all; but that each one of us knew best the great men in his own special field of labor, while because of his familiarity with the subject he could also see best the weaknesses of even the greatest men in his own field. And still further, is there not much weight in Professor McMurry's question: "Is not the great teacher he who, after knowing his subject-matter well, directs his attention and investigations first of all to the relation of this subject-matter to the minds of his students; whose chief effort is to fit or adapt the material to the growing mind in such a way as to make it grow strong in the best manner?" This is certainly true in the case of children, and to a great extent in that of college students, though with them, in my judgment, the teacher should be also a seeker after new truth in his own special field of work.

The more important point, however, and it is perhaps the most important one in the whole article, is the other one touched upon. Is it true that a science in the transitional stage "best stimulates the self-activity of the student," and that in consequence a science at that stage is best for culture purposes? From what has already been said it is evident

that, so far as thoroughly trained specialists are concerned, the field of nature is broad enough to offer the opportunity for new discoveries in all departments. So far as college students are to be considered—and they are really the only ones in question here, though I can but suspect that Professor Patten has at times forgotten this—one might perhaps grant that the possibility of adding something really new to the sum of human knowledge, would serve as a special stimulus to good work, though I doubt if this one thing would ever make an appreciable difference in the classroom or laboratory.

If this were granted, however, one should ask if this added zest may not be given at too great a cost. The question is one largely of methods of teaching. I quite agree with Professor Patten as to the importance of inductive work in science, in language, in history, in political economy, in all fields of study. I fail to see, however, any reason why physics or grammar may not be taught inductively as well as botany or political economy; but, if so, it takes much of the force from his argument. He well says that "if a science is taught for culture, it must be presented as it was when in a state of transition from the inductive to the deductive stage"; for this seems to recognize that it is well to train students in inductive reasoning. The subjects are new to the students; it rests with the teacher to lead his pupils to develop for themselves the general principles. If the science is a fully developed one, the teacher has his choice of a large number of principles to be developed, and may select them in the order best suited to the development of the pupil, without in any way lessening the real drill that the students will get from making their own generalizations. One may well doubt the advisability of attempting to develop with pupils of college grade a generalization that the teacher has not yet made for himself, a process which Professor Patten would make the regular one. The loss from time wasted in fruitless effort—fruitless, because the pupils would not merely fail of results that would help the cause of science, but because they would also be led into discouragements and loose habits of work—

would be more than the gain in added inspiration from the hope, a rather forlorn one, of a possible discovery of some new law. For advanced university students, who have already had their powers well developed by a thorough, carefully planned course of inductive work under a trained teacher, who had been over the whole field before them, the case might well be different. It should be borne in mind, however, that our college students are mere tyros in science, and have as yet, most of them, had very little practice in really scientific work in any line.

One can but feel in reading his article that Professor Patten has seen some good teaching in political economy—his own students would doubtless testify to the truth of this supposition—but some very poor teaching in geometry and physics. He is certainly unjust toward much of the work that is done in our schools and colleges. He says that geometry "is always presented in its present complete form." He thinks that it would be better if the student had occasionally to supply a missing proposition, and asks: "Would not the effort of the student in endeavoring to supply this missing link be of much greater educational value to him than the learning of a dozen propositions demonstrated in full in his book?" Of course; but as long ago as when I was in college, the work in geometry that we did there was nearly all of the kind that he suggests; the days of learning by rote fully demonstrated propositions had already gone by, in that college at least, and now one seldom finds such methods even in our larger high schools. Our later text-books are prepared with reference to leading the pupils on to what is for them really original work, as much so as any done by Euclid himself; and a visit to many classes in geometry would readily convince one that if Greek boys in the days of Plato studied geometry with more enthusiasm than do ours, the subject must have been enchanting. Political economy and the moral sciences in general may be good to develop habits of inductive reasoning. Surely no one believes that more firmly than I do; and yet I have seen teachers of political economy whose pupils were unable to get any drill

of that kind, and who found it a "dismal science," indeed. The teacher was at fault, not the subject.

Let me quote again from the professor of physics before cited, Professor Sanford, of the Leland Stanford, Jr., University, whom—as an advanced teacher of the later days, who believes that college students should be taught for culture, not merely for utility—I asked to outline for me briefly his aims and methods in teaching physics. He says:

"There are very many possible lines of mental and moral training to be had from the study of physics. In general, I attempt to outline my work so that the pupils will reason from concrete examples to general principles, then deduce other concrete examples from these generalizations, and test their deductions by experiment. To take a single example. I wish my pupils to study the pendulum. I select the law of the relation of the length to the time of vibration, as one generalization which I wish developed. Suppose I ask the following questions: 'How long will it take a pendulum two feet long to make ten vibrations? one one foot long? one six inches long?' etc. After a number of experiments of this kind, I ask them to tabulate their results and state the law. Then they are given tasks to do and confirm by experiments, *e.g.*: 'Make a pendulum that will vibrate three times in two seconds,' etc. This seems to me to cover the whole range of reasoning. We have, first, induction; second, hypothesis; third, deduction from this hypothesis; and fourth, testing this deduction, and with it the hypothesis, by experiment. My aim, so far as mental training is concerned, is to give practice in this whole process. Every generalization in physics can be used to give just this kind of training. Later these general principles may themselves become the inductive series for a higher generalization, and the hypothesis thus formed may be used as the major premise in another deduction, this deduction tested experimentally, etc. This seems to me to cover the whole ground. It cannot be covered, in this way, by a science which is yet in its inductive stages."*

Did Archimedes or Galileo get any better training from

their study of physics than do young men of to-day from this, now deductive, science, if it is taught in the way here suggested? Does it not rather seem clear that the more nearly complete the science becomes, the better adapted it is for such thorough training work? As to the interest such work arouses, I have seen students in high schools from preference spend a good part of their playtime in the laboratory. They were hungering for knowledge of the laws of physics, and their teacher saw to it that they got the knowledge by working it out for themselves.

It seems also clear that political economy, for example, could not now—and never can—give training in the whole process of reasoning in this way; though, as I believe, the subject has other advantages that, with an equally good teacher, fully counterbalance this. Good teachers of other sciences will so plan their work as to give good results for culture; while poor teachers of even the moral sciences will make of their subjects mere drudgery from which little culture can be derived. Witness a good part of the teaching in history and political economy that our schools and colleges all over the country have suffered under. It is encouraging to note that there is a genuine reaction in favor of a more careful study of the principles of teaching, that has already produced good results and is destined to do even more in the near future.

It is fair, however, to consider the relative values of, for example, political economy and physics, to give training in inductive reasoning or in the various kinds of reasoning already mentioned, when taught with equal skill with that purpose in view. For such a question the answer has already been given above in good part. In physics, the premises can be controlled almost absolutely, nearly enough for practical purposes, without any process of assuming a condition of affairs that is not known or may not be in fact produced. The premises may be simple ones or a simple series, as in the example given above, or may be made of great complexity, at the will of the teacher, who can adapt his work to the needs of his class. In political economy all the problems involve many

complex and even variable premises. No problem can be made simple, unless it assumes conditions not found in society unmingled with other factors. So far as this one fact is concerned, it would seem that physics is to be preferred; but this brings me to the next most important point in Professor Patten's article, the one relating to the character of the premises used in the different sciences. I have much sympathy with the stand taken by him in this paragraph, for it is one that I have often used in discussions with teachers of the natural sciences over the educational value of their special subjects. And yet, in part, as a result of such discussions, I can but feel that Professor Patten has too narrow a view of the question. "The habit of using premises which the student does not question," said he, "creates a dogmatic spirit. It dwarfs his mind by confining him to that form of logic which deals only with relations of premises to the conclusion. Such reasoning excites little interest or activity." And again, with much force, "The study of premises, however, is a study of mankind and of the laws of thinking, and is a necessary condition to good reasoning upon practical subjects. The same premise has a different degree of force upon minds in different stages of development and in different social environments. To question the premises from which one reasons, opens up the broadest problems of psychology, and forces one to examine into the complicated phenomena of the society in which one lives. The feeling, therefore, that his premises are open to discussion, gives the student much greater incentive to accurate thinking than he would have if he were studying a science with axiomatic premises." And still again, "If a good professional man is wanted, let him study deductive sciences with unquestioned premises, but beware of praising the same course of study for the culture it gives." Now it is doubtless true that a very large proportion of the judgments that we have to make in our social, and even in our business life, are these moral judgments based on premises that are uncertain, and that have also to be critically considered; and it is well for our young people to have much practice in making

such judgments under the oversight of a cool-headed, careful teacher, who will show them how likely one is to err in such matters, and how modest and conservative one should always be. But here again we come to the consideration of the personal qualifications of the individual teacher. Where it is impossible to bring one's opinions to the test of accurate measurement; where one's judgment is after all a matter of opinion, it is hard to convince the fool that he is not a wise man. It is in just this field of infinite debate that we find the most foolish dogmatism. Let me mention as proof many political economists, many so-called statesmen, nearly the entire population when it comes to a question of practical politics, or perhaps even worse, when the question is one of practical religion. Young people often differ in judgment on a question of natural science; but a measuring-rod or a balance, a microscope or a retort, forbids them to dogmatize. It is an easy matter for a teacher of science who has a conceited, stubborn pupil with a wrong idea that he is tenaciously holding, to refer him to a simple experiment and let Nature, who has no nonsense in her methods of working, show him his foolishness. I have known teachers of science more than once to teach in this way at least an apparent modesty to boys who were disposed to be dogmatic. But when the question is one of literary taste, or a complicated social one, like that of pauperism, or an economic one like that of protection, if you please, much more judgment and skill are required in the teacher. The pupil's opinion can be controverted only by argument, and that combined with wise handling of his individual prejudices. If he does not absorb from his teacher's own wise spirit the habit of tolerance, it cannot be forced upon him, as in the natural sciences. The only test is that of a majority vote of those that are called authorities; and he has clearly a right to his own opinion as against these. The teacher may say, as I knew one college professor to do: "Do callow youths like you venture to set up your judgment in literary matters in opposition to that of your text-book author, a recognized authority in literature?" but such a question is not likely to discourage

dogmatism in pupils. As a matter of fact, many of the college students of even our day take the opinion of their professors in political economy and history and literature, without any further question; and nothing could more surely lead to dogmatism. Of course I am not forgetting that many teachers are too wise to permit their pupils to adopt opinions that they have not clearly thought out for themselves, and that some pupils learn fully to appreciate the many sources of error in reasoning on social questions; but it still remains true that more skill in the teacher is required to prevent pupils from falling into dogmatic ways, when the subject taught is one in which the conclusion of the student cannot be put to an absolute test of experiment or proof. Though the question is not raised in Professor Patten's article, I still wish to call attention to President Walker's vigorous comparison of the moral effects of the two classes of subjects in the October number of this REVIEW. I can but think that with first-class teachers in both lines, the philosophical studies would not only not appear to a disadvantage in the comparison, but rather the reverse. With poor teachers in both, I fully agree with President Walker.

Professor Patten is right in dwelling upon the advantages that arise from the study of the complex premises found in social questions of all kinds. As has been seen, I think that he is wrong in thinking that in themselves they check the spirit of dogmatism. I doubt also if they lead to more "accurate thinking," as he suggests, than do subjects with what he calls "axiomatic premises."

We need further to ask—thinking about what? The economist probably reasons more accurately on social questions than does the physicist, not because his habits of thinking are better, but because he is more familiar with his premises. On questions of physics, we should find the physicist the more accurate reasoner, even where the problem were well within the comprehension of the economist, and from the same reason. As to which will train to more accurate habits—while from the habit of dealing with complicated premises, the economist will possibly more often ask: Is there any other possible factor?

before he sees proof of it, still this is not all that is needed for accurate reasoning. One must also be sure of his premises, and in physics no result of value can ever be reached without careful measurement and accurate knowledge of your premises—and, too, you always are informed when you have been careless regarding your knowledge of premises. Nature never forgets to call you to account. On the other hand, however, while you are equally sure to get wrong results in political economy, if your knowledge of your premises is faulty, you may never find it out. Think with pity of the economists whose errors may not be discovered for generations after they have ceased to reason. So far as "accurate thinking" is concerned, the economists might well sigh for kindly but severe Nature to set them on the track of their errors, as she does the physicists.

No, the advantages that the social sciences as culture studies possess over physics, astronomy, etc., are not, in my judgment, those that have been cited by Professor Patten. It is not that they are inductive or transitional, nor that they train better to "accurate thinking" because of their complexity. Professor Patten touches it more nearly when he says as quoted: "The study of premises is a study of mankind," etc. Not the study of all premises was in his mind when he wrote that, and added "To question the premises from which one reasons, opens up the broadest questions of psychology, and forces one to examine into the complicated phenomena of the society in which one lives;" but the study of the premises found in social problems. The knowledge of these subjects is that which comes nearest to our hearts and lives, is that which makes us or may make us useful or injurious to ourselves and to society; and the dealing with such subjects tends especially to broaden our sympathies and show us how to deal wisely and charitably with our fellow-men.

Given two boys of equal ability with equally skilled teachers, one of whom becomes a physicist, with electricity a specialty, the other an economist, with pauperism and crime his specialty, I should not expect to see the latter become

the more accurate reasoner, nor the more honest or truth-loving, generally speaking. Quite possibly he would do no more for the poor in the long run than the other by his invention would do indirectly; but I should expect to see him a man of more sensitive, though better tempered, feeling for the sufferings of others, and one also whose knowledge would keep him from much unwise action in social matters into which the physicist might well be led. I should expect to find him a man better fitted to meet and manage wisely social evils, or for that matter an excited crowd, if he had studied his subject at first hand, as he should—and one to whom legislators and philanthropists would more readily turn. He might not do society more good than the other; but the good that he did would probably be more direct and more readily seen. Surely these advantages of a moral nature in educational value may be granted to the social sciences. So, too, the moral sciences, including history, language, and literature, are doubtless better adapted for training the imagination along special lines, for cultivating the æsthetic tastes, and for inspiring a love for the beautiful and good in literature and art, than are the natural sciences. They are better for many purposes; but we need both classes of studies for culture as well as for civilization, and our colleges should have both fully represented in their curricula.

In one of the latest paragraphs of his article Professor Patten, I conjecture, does not intend to be taken quite literally. He says: "The college course must select only those problems in each science that have a high educational value, and study them for this value, and not for their utility as parts of a connected whole. In this way all the sciences can have an adequate representation in the college curriculum without that crowding which at present is so much to be regretted." The expression, "all the sciences," is very comprehensive, and even if we were to take it in the narrow meaning of all those sciences that are commonly represented in our colleges and universities, we shall still find it too broad. I wish to state again my agreement with Professor Patten's desire to teach science

with reference to its culture value, and, where the distinction can be made, to omit the parts or problems that do not tend directly toward culture. But if I do not misunderstand the spirit of the passage just quoted, I must still dissent emphatically. It has seemed to many teachers of late years that the short courses in many subjects taught in our colleges—whatever the purpose may have been—are, relatively speaking, of little value for mental culture from their very shortness. Of what use for culture, relatively speaking, is a course in botany, or physics, or history, or German, or Greek, or political economy, if it lasts only twelve weeks, compared with one of two or three years? I do not wish to be understood as saying that we should have no short courses in our colleges. I think there is culture in even a little knowledge, and that it is desirable to know at least a little of many things. Furthermore, if one has a thorough understanding of some one subject, a good teacher can give him a fair idea of the general nature of another subject in a short course. But if I may quote again from Professor Patten's own admirable words on educational values, I would say that a twelve weeks' course, however wisely the problems may be selected, can give one very little of the "faculty to do other work of a like character," very little "added confidence in his intellect," very little "keener appreciation of his moral obligations," or, to quote again Professor McMurry, very little "lively, permanent interest in the subject"—a very important matter for culture. Not merely discipline is needed, but also mental activity, and only permanent interest in some subject will develop this. Here, too, may be mentioned President Walker's happy citation of law, medical, and engineering students, as showing more interest, and hence giving more attention and earnestness to their work. The educational value of this must not be underestimated. To get any of these effects in any noteworthy degree, one needs to devote a good deal of time to some one specific subject; not with the idea of making one's self an expert workman for pecuniary ends—for I should omit the topics that had no special developing power, if they are to be

found; but because every science begins with the alphabet, so to speak, in the learning of which for every college student there is relatively little training of the judgment, and because the best training and the greatest interest come after the student begins to feel in some slight degree the sense of mastery and confidence in his own power to go ahead independently. These beginnings, which I have called the alphabet, of course differ much in character and importance in the different sciences. In one it is the technique of the microscope, in another the mere handling of the laboratory apparatus, in a third the clearing up of definitions, etc. The old classical curriculum was, after all, formed largely on the right plan. There the classics were so studied that, if they were even fairly taught, the student began to get the best of discipline from them. The same thing is true of mathematics. And the two subjects were so diverse in character that the mental discipline was of a fairly diversified kind. The weak point in it was that it did not recognize the differences in individual aptitudes, and this, too, is the weak point at bottom of Professor Patten's plan. He seems to overestimate relatively the value of inductive reasoning along certain lines, as if all students needed the same thing. Each student needs for his mental development a thorough course of training in some one line, continued until he has learned to know what it is to do some really thorough work on his own account. I omit here any special consideration of studies that are especially tools, such as language, elementary mathematics, etc., that all students must have before they can do thorough, independent work in anything. Until that stage of independent work is reached, the "budding man" to use Professor Patten's expression, has not yet bloomed. He is not yet in a condition to begin to bear fruit. He need not have become a specialist in the sense of having set out on a life career, as is implied in the professional and purely university work; but he must have learned how to handle himself in some independent work, or he is not yet a man, and has not yet reached the development that is or ought to be implied in a college

bachelor's degree, nor has he the permanent interest in intellectual work that is essential to mental activity, thoughtfulness, growth. The old classical course gave this power to all those whose natural aptitudes led them toward language, or mathematics, or grammar. They were able to do independent work in any of these lines. The students whose natural aptitudes were of another kind fared badly. Let us frankly recognize the fact that the old course was an admirably planned course, in the main of the modern kind, for those who wished to develop their powers along the line of classical study. It is an excellent special course, but it is a special course in language, and no more of a general culture course than one planned with literature or physics as its backbone, though possibly the classical course is adapted to the needs of a greater number of students than would be such a course. The modern curriculum differs from this, not in picking out small parts from all the studies—for even if we were to try to do that by selecting the culture parts, as Professor Patten suggests, we should find it an impossibility to give thorough culture, unless we left enough of some one of them to give a student the power of going ahead independently in that line, and this requires years of work—but in so arranging the curriculum that the student may obtain this special drill in the line of his aptitudes; so that from it he will get the best culture. One cannot be master of himself until he is nearly enough master of some one subject, be it theology or Greek, physics or political economy, carpentry or blacksmithing, or mule-driving, to work in it to advantage without a master. The sense of self-mastery does not come without this sense of independent power in work.

Again, without a fairly thorough knowledge of some one subject, that essential element in all culture, that almost indispensable condition of successful growth, the power to get a definite outline for one's own ignorance, is wanting. Until one has a good knowledge of some one subject, he has no conception of the extent of his ignorance on other subjects. A smattering of many subjects is apt to lead one to think

that he has a fairly complete knowledge of all. The graduates of many of our "mushroom normals" of the West, who have "finished" zoölogy, botany, political economy, etc., are pitiful examples of the effect of courses that fail to give a fairly thorough mastery of some one subject, although bad teaching is partly responsible for this result.

The general effect of Professor Patten's article is to lead one to think that he has a too narrow conception of the meaning of that somewhat indefinite word culture, though his verbal definition of it seems broad enough. The insistence upon inductive studies, upon the moral sciences, etc., leads one to believe that in his mind culture means the same thing for all persons; and especially, so far as intellectual processes are concerned, does it mean for him the power to reason inductively, and with accurate judgment, regarding the real nature of social conditions. Ought we not to recognize more fully the great variety of human gifts and aptitudes, the great range of human interests? After the man has the one or two essential moral qualities that belong to all true manhood and womanhood as such, especially that quality that Lowell fitly calls "the brave old wisdom of sincerity," and the kindliness of nature that leads to true courtesy—no one can pretend to culture in a complete sense, with the needs of society as our criterion, who has not these qualities—what more shall we ask, except that he have trained and developed the natural powers that he possesses, whatever these may be. Culture is not a matter of knowledge, but of development; and as one man has one gift, while another has a vastly different one, culture is as varied as human nature. I write as a teacher and student of social science, not with reference to the opinions of the "Four Hundred" regarding culture.

Recognizing this principle, we need to be much more guarded in our estimate of the relative educational values of the different studies. One study will have great educational value for one student, while the same study, taught in the same way by the same teacher, will have a much smaller educational value for another. Professor Patten has recognized this principle in

part in what he has to say regarding the "inherited qualities of the college student"; but I think that all teachers of mathematics will agree that not all pupils have inherited any great aptness for mathematics, while it is equally certain that some of them have this aptitude. For one, this study might have little educational value; for another, the greatest. I pass by the question whether a student should study that which is easy for him or that which is difficult. Either answer fits this argument. Educational values, then, may not be estimated with any degree of accuracy without reference to both the manner of teaching and the individual aptitude of the student. The ideal college curriculum would be, not a fixed one, but one that could be fitted to the varying needs of the individual students; so that each one could best bring out what is in him. I wish to be understood broadly. While colleges are especially to give intellectual culture, we may with propriety extend the word to include development in other lines. If a man has but little aptitude for book-learning or scholarship in any line, as we commonly use the word, but has a gift for woodcraft or horse-training, and has developed his powers to the best advantage, so that he is doing for society the best of which he is capable, I see no reason why he should not have his culture recognized. If he has the sincerity and courtesy that I spoke of before as evidence of moral training, I do not know why he is not the equal in culture of the man who has spent the same time and mental energy and who has attained the same degree of development in mathematics. The college curriculum should include first those studies that seem best fitted to the mental development of the greatest number that will take advantage of them, and should then be extended as far to suit the needs of lesser numbers as the means of the institution will permit. I know of no reason why it should stop short of teaching those whose best life work lies in horse-training to develop their skill, their powers, their natural endowments in this direction in the best possible way, provided the means hold out. Let me not be misunderstood as advocating technical courses for merely tech-

nical purposes in a college curriculum. I simply mean to make it clear that the diversity of human nature should be recognized as far as is practicable in our college courses, in order that the best culture may be given to each student that he is capable of receiving. Further than that, let us recognize the fact that the educational value of any study is only relative; that no study or series of studies is adapted to all, but that the most that we can say is, that if this study is taught in such a way, it is adapted to develop certain named qualities in a student. If then an individual student needs such a development, let him take this study; but if he needs another development, give him another subject suited to his needs. Or, in many cases, it will be sufficient to have the same subject taught in different ways to meet different needs. But, let me repeat, the purpose of it all is the best development that each student is capable of receiving.

So, too, we cannot well speak absolutely of quantity of educational values, but rather of the kind of educational value. We may not say geometry has more educational value than political economy, or *vice versa;* though we may say geometry is better adapted for training in accurate deductive reasoning perhaps. This might lead us to say also, perhaps, in a specific case, that geometry has more educational value for this boy than political economy; while at the same time we should probably be compelled to say of another boy in the same college that political economy has more educational value for him than has geometry. Again, we may say that when we have studied college students with especial reference to the kind, rather than the amount, of development that they need, we may say this study has more educational value for American college students as a whole, because more of them need it, than has that study. Our college curricula, then, will first offer facilities for those studies that will, on this basis, as was intimated before, meet the needs of most students. When means are small, if college officers are wise, they will not try to offer a little of everything, but to make some one or two courses—those that in their territory are likely to do the most good—thorough, with supple-

mentary elementary courses that all must have. Students that need different training should go to another college that is offering some other especially strong course in the line of their needs, or else to a large wealthy one that offers many such courses.

Though my reasons for my opinion are materially different from those given by Professor Patten, as has been seen, I still expect to see a somewhat similar evolution of the college curriculum, yet with an important difference. The difference lies in this, that instead of speaking of "the college course" with the moral sciences occupying a "prominent and perhaps a dominant place" in it, I should rather speak of, and I expect to see rather, co-ordinated college courses in more of which the social sciences will have a prominent, and even in many, the dominant part, than in the courses of the past. I should not say with him, "Complete courses, making the student a master of what he studies, must be given only in graduate work," unless by "complete course" is meant a specialty which one expects to make his life-work, and not then if it be one that has equal value in developing the student's powers. I rather believe for the reasons already given that every college degree should signify that its holder has had a training in at least one subject so thorough and complete as to arouse in him a permanent interest and make him capable of going ahead alone into independent work in that line with a reasonable degree of certainty that fruitful results will follow.

I agree with him that the social sciences form, for many, and an increasing number, "an ideal group." As they are developed, and as society increases in complexity, and also in refinement and righteousness, while mathematics, the languages, and the natural sciences will always have their place, and that a large one, in the college curriculum, I think that many more students than at present will find their delight and their development in the study of those sciences that deal perhaps more directly with all that is highest and best in man and society.

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II.

ON TEACHING THE EFFECTIVE USE OF ENGLISH.

No accomplishment excels a thorough mastery of English. Those who have acquired it are the most cultivated and scholarly men and women of our age. This superiority frequently passes unnoticed; for it has a certain subtle quality like the delicate odor of roses. On reading or listening to the best English, we never think of the form of expression; and not till afterward, when the clearness of our conception reveals itself, do we notice the beauty and the appropriateness of the language. To use English appropriately, elegantly, and forcibly, implies not only a thorough knowledge of the language itself, but also a broad culture. It implies both connected, logical thought, and the ability to clothe the thought, grammatically, rhetorically, and connectedly, in fit language. A style as massive and majestic as that of Burke or Macaulay renders any man immortal. The grace of Irving and the copious fluency of Scott fascinate the reader; and the power to write with the elegance of Mr. George William Curtis, President Eliot, or Colonel Higginson, would reconcile almost anybody to being a Mugwump.

The power to use the English language perfectly cannot be attained in the early years of life. It comes only with mature discipline and ripe scholarship. But the power to use the English language well, that is to employ the language appropriate to the degree of advancement in thought and culture, to suit the expression to the thought and the thought to the expression, in all the elegance of the simplicity of our noble mother tongue, should be trained simultaneously with the developing faculties of the child. And if this development is natural and correct, nothing once learned will ever need to be unlearned. The language of the child, grown to a larger stature, will be the language of the man; the early

English will be the foundation, the bed-rock, so to speak, of the later English.

Accordingly the best writers exhibit their most effective style when they write from the plane of the child's understanding. Hawthorne's *Tales of a Grandfather*, for example, present historical truth, in a most impressive way, to grown people as well as to children; and his *Wonder Book*, by the simplicity and directness of its narrative, reveals the ancient fables, legends, and myths, to the minds of both youths and adults, much more vividly than the more elaborate styles in which these tales are usually expressed.

But Hawthorne probably did not acquire the power of expressing himself with this forceful simplicity till after he had gone through the whole gamut of a more pretentious style, and had sounded all the shallows and quicksands of so-called elegant writing. By long use of an artificial and more or less stilted form of expression, and by perceiving the weakness of such a style, I apprehend, he rose to the grandeur of this elegant and effective simplicity and directness; for such is the road by which most of our best writers have acquired a masterly use of the language.

My contention is that this style ought to be acquired directly, and not in this roundabout way; and that in the man, it should grow naturally from his childhood's speech. To know the fine shades of meaning conveyed by the different forms of expression, and by the several words employed and their location in the sentence, requires a careful study both of the language itself and of the thought it conveys; and to understand thoroughly how these fine shades take on different colors when the expression is slightly modified—by changing from the active to the passive or the reverse, for example, or by the rearrangement of words and expressions, and by the substitution of other words—this requires both a wide range of reading and an exhaustive study of the subject-matter treated in the literature. It is my present purpose to indicate, partially at least, the way in which this end may be accomplished—an end too little thought of in conducting our schools.

The mastery of English must be sought indirectly and by successive easy steps, and not at one bound; but the aim should always be toward this end. For what the pupil can express, is the only sure index of his progress and thought. Language is first learned through the ear, and used orally and unconsciously by a child, just as he breathes. The child imitates. If the language of those about him is correct, his will be correct. The child must be taught, from his first entrance at school, to speak correctly; not by precept, but by example. He need not at first be told why one form is correct and another incorrect; but keeping his attention upon what he really wishes to say, the teacher should tell him how to say it properly—in good colloquial, everyday English. No bad language should be allowed to go uncorrected. It should not be emphasized; it should be thrown aside at once; and the right expression should be substituted and impressed upon the mind. New ideas should be awakened by the teacher and expressed appropriately, with the teacher's aid if necessary. This is a large and ever-present task in school—in all schools from the first to the last. Sometimes the thought suggests the expression, and sometimes the expression suggests the thought; but they should never be separated. One of the greatest faults in the teaching of language is that speech is allowed to be used without reference to the ideas which it should convey. Expression should not be stimulated beyond the thought to be expressed; but it should always accompany the thought.

When at a subsequent period language is learned through the eye, the whole field of literature, the fossilized thought of humanity, is laid open to the mind. Here the language suggests the thought. In the early stages of studying language in this form, the first object is to apprehend the thought; the second, to give it vocal expression in the language of the author; and the third, to express the thought in one's own language.

At this point let me consider for a moment the two purposes which the reading lessons in the schools ought to sub-

serve. The first of these is vocal expression; the appropriate handling of the voice to convey to the ear of another the sentiments contained in the matter read. Here emphasis on words and clauses, inflection, modulation, and pitch of voice, distinctness of articulation, the prolongation of the vowel sounds and the pauses, in poetry, to bring out the rhythm, all must be taught. To accomplish this, selections of varied quality must be made; rules, or the statement of what is the correct form, are useful; and drill is requisite; that is, the same selection may be read many times with profit, in order to develop and train the vocal organs, and to accustom the pupil to the proper vocal expression. If these varied selections are taken from the best writers, then there is the incidental gain that the pupil, in the advanced classes especially, becomes familiar with some of the masterpieces of literature while he is learning to read well. It is on this principle that the various series of school readers have been made up.

A second purpose of the reading lesson is to familiarize the pupils with good literature and to interest them in its subject-matter. For this purpose, and for the additional purpose of accustoming the pupil to perceive quickly the author's meaning and to give it appropriate oral expression, supplementary reading has been introduced quite generally into the public schools. And now it has become quite fashionable to decry the reading books, with epithets more or less opprobrious, as if the children in our schools should have nothing but literature pure and simple served to them in their reading lessons. I am inclined to the opinion that those people who join in this outcry, under the lead of President Eliot, do not appreciate any more than he does the necessity for teaching vocal expression, or the value there may be in giving pupils many selections from a variety of good authors instead of continuous reading from a few, when so little can be read. The gems of literature found in our best reading books have made a lasting impression on many a youthful mind; and not infrequently this has resulted later in a refined literary taste. Under existing conditions it is quite unlikely that those pupils would

have derived so much profit if they had been confined to one author, or to a few, however excellent.

The third object referred to above is to express thought in one's own language. The proper method to be pursued at the earliest stage, when the child first comes to school, has already been described; and this is the key to all that follows.

The facile use of language is acquired by oral speech as well as by writing. An excellent school exercise is to induce pupils to relate in clear, simple, conversational language, incidents in their own experience, or to give descriptions of places they have seen, or processes of manufacture, the construction of tools, machinery, or anything whatever which they are familiar with. Or an interesting story may be read, and soon after a pupil may be asked to relate it before the school in his own language. By the use of a little tact, such as every good teacher has, a healthy emulation may be aroused so that each pupil will be ambitious to excel in an exercise of this kind. The only indispensable requirement here is that the pupil knows something about the matter of which he is to speak. In such an exercise the pupil will make mistakes at first. He should be commended for what he does well, and then his mistakes should be pointed out with kindly considerateness, and in such a way that he will be encouraged to continue, and avoid them in the future. In these criticisms great emphasis should be placed upon the order of his remarks; that is, relative statements should be grouped together in such a way that one follows another naturally, and grows out of it. This exercise, continued weekly or semi-weekly throughout the school course by a careful teacher, will greatly enlarge the pupil's command of language. It will give him confidence; it will create a habit of logical thinking and of entertaining conversation.

I once heard an after-dinner discussion on English literature by Professor Palmer of Harvard. His speech was simple, direct, in logical order, without effort, clear, clean-cut, polished, and without a word misplaced. And when he said that for many years he had constantly studied English litera-

ture in his own conversation and speech, everyone who heard him saw the evidence in what he had said. It was elegance without a flaw. The effective use of English may be studied and taught in this way—orally. But this is not all. Oral language, speech, is illusive; it is on the wing. It cannot be grasped, inspected, analyzed. Hence the writing of English is necessary as a training in exactness and precision. In this exercise, as in the last, the same rules apply about the pupil's subject-matter, its logical arrangement and aim, and the nature of the criticism. The exercise in all primary, grammar, and high schools, should be very simple at first. It should be written in the presence of the teacher, a half-hour or an hour being devoted to it. When finished, the manuscript should lie on the teacher's desk till the next lesson, and then be handed back to the pupil for correction and revision. In making his first draft the pupil will write what he has to say in the best order, and with the best language that occurs to him. In the revision he will attend to the form of expression, substitute more exact language, and insert what may be necessary for the complete development of his idea. After exhausting his own resources in perfecting his essay he will hand it to the teacher for criticism and correction. In marking the paper it is well for the teacher to indicate where the fault or the excellence lies, without showing precisely what it is. It is better for the pupil to discover this for himself, or if he is unable to do so, to ask the teacher, who will then lead him to the discovery by skillful questions.

In the early stages, and as a rule not before the second year in the high-school course, the same subject should not be assigned to all the pupils, especially if the writing is done, as described, in the teacher's presence. Pupils will write better on some subject which they know about. If young pupils are required to "read up" some subject, they almost invariably fall into the style of what they read, and their essay is liable to become more or less a mere compilation. If the essay is upon a subject about which pupils of almost any age are to get their information from books, it is all the more neces-

sary that the writing be done in the presence of the teacher. To write in this way they are compelled to have the information thoroughly in mind, or they cannot write at all; and having it in mind is what gives them the power to express it well.

The habit of talking well is acquired insensibly by listening to conversation; and in like manner the style in writing is insensibly acquired by reading. If the author expresses himself well, the student will naturally fall into the same style of expression. Hence it is important to place before the student good models. But young pupils attempting too ambitious a style are like David in the armor of Saul. It is more effective for youthful writers to use their sling, as David did. On the other hand, it is not best to place before the young a literature prepared for them—adapted to their supposed capacity, and filled with boyish expressions and slang phrases, such as boys are supposed to use in conversation. This is frequently done to awaken interest. We find much of this kind of literature in the popular magazines for boys and girls; but whatever may be gained in interest, more is lost through the influence of the faulty style. And very little is really gained. It is the story, its incidents, and its action, and not the colloquial style, that interest the young. They will be even more absorbed if the story is told with the elegant simplicity of Hawthorne.

As to the vocabulary, words are not learned from the dictionary. That indispensable book should always be at hand. But really to know a word, and to be able to use it appropriately, one must use the word many times and in many relations. The same word has slightly different meanings in various connections; and these shades of meaning can be learned only by seeing the word in use in these connections. It is seen at different angles, as it were, and in perspective. All this can be only partially expressed in the dictionary. To illustrate: I have a correspondent in Hungary, a professor in the University of Klausenburg. He writes in English; and he writes remarkably well, considering that he must have obtained his knowledge of English from books. In one of his

letters to me he remarked that my "precious" letter had reached him. Now the dictionary defines precious as "very valuable," "highly esteemed," "dear"; and how should a foreigner know which of these words is appropriate in that place? The only way for him, or for any of us, to know is to see how the word is used, and in what connection, by the best writers.

As to the range of knowledge: All knowledge is related; and all departments of knowledge shade into each other by imperceptible gradations. In writing on any given subject, the knowledge of other subjects floats in and blends with the style, imparting beauty and effectiveness. Impressions are conveyed in writing by appeals to the imagination of the reader. The successful writer brings a picture before the mind; and the related knowledge may be like the frame to set off the picture, or like new rays of light thrown upon the canvas to give it vividness. The value of this related knowledge is well illustrated in Macaulay's description of the trial of Warren Hastings. He throws upon the description the light of his vast erudition. He stimulates the imagination by all these side lights, enchaining the attention, so that we see as in a picture that brilliant assemblage, and we are filled with admiration of the scene. He conjures up the historian of Rome and the eventful history of the Eternal City; he reveals his acquaintance with art in his happy allusion to Reynolds, and his acquaintance with the recent achievements of literature in his familiarity with the researches of Parr, at that time famous; he displays his knowledge of the inner workings of society, and the intrigues by which thrones are shaken and dynasties are overthrown, in his reference to the salon of Mrs. Montague and the fair-haired daughters of the house of Brunswick; and he shows his appreciation of the drama by recalling Siddons, who, "in the prime of her majestic beauty, looked with emotion on a scene surpassing all the imitations of the stage."

For young pupils, the study of formal rhetoric is not profitable. They are not able to comprehend it fully; and they are likely to be confused by its distinctions and its maxims. Moreover, if they attempted consciously to practice these

maxims—to use a trope here, for example, and to adopt the florid style there—their attention being directed to the form of expression, the charm will be gone, and the style will become forced and unnatural. The same is true of the grammatical structure of the language which pupils use. Language is the means of expressing thought; it is the tool with which the writer works. The workman must know how to use his tools; but if his eye is on his tools and not on his work, the work will not be skillfully done.

A knowledge of grammar, however, up to a certain point, and a certain command of the language, must precede the ability to write at all; and by successive attempts this knowledge is amplified. Rhetoric, on the other hand, may best be studied after a considerable facility in writing has been attained. But both the grammatical structure, and the principles of rhetoric, may be taught, informally, by the teacher in correcting the exercises of pupils, and in directing their study of the books placed before them as models of style. In this way a real interest in the study of grammar may be awakened, for pupils will perceive its use; and in the same way they may be led to an interested study of rhetorical effects and how to secure them.

And finally, in criticising a pupil's writing, and in guiding him in criticising his own, ask just what he means by each and every word, every phrase, and every sentence. You will then learn whether the language expresses any definite conception and, if the writing is your own, whether you have said what you intended to say. It is this severe and relentless examination that leads to precision, perspicuity, and strength in style; and without these qualities there is no beauty. And if an addition to this exercise, long and patiently continued, the mind is stored with the riches of much learning, and strengthened by prolonged logical thought, then, when you begin to write, you will express yourself in simple, direct, terse, and vigorous English.

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III.

OLD AND NEW METHODS IN ELEMENTARY GEOMETRY.

One difference distinguishing the two methods is that of aim or purpose. The modern geometry aims at results. The ancient geometry, for a long time, was used as a means of mental training. It was more careful of the process by which results were reached than desirous to reach those results by the shortest paths. With it discipline of the mind was more important than saving time or gaining knowledge. The modern geometry is able to employ a better arithmetic than the ancient mathematicians possessed. It has, therefore, become a mixed science. Its treatment of the subject of ratio and proportion is entirely arithmetical, symbols standing for processes and letters representing numerical measures of magnitudes. It has, consequently, a wider grasp of the subject. But the ancient method has the advantage of making geometry a pure science. Because of its fewer symbols and its more rigorous logic it is better adapted to the training of the growing reasoning powers of youth. The writer does not claim that it is best for all students to begin, pursue, and finish the study of elementary geometry by the ancient method. He merely wishes to set forth some of the advantages of commencing the study of geometry in that way. After mastering that method by going through Euclid's first book of the Elements of Geometry, if no further, it is claimed that the student will better appreciate the modern treatment of the subject, and will gain more good from it, than if he had taken up the study without a preliminary study of the old method. This will be evident by a comparison of the two methods: 1, in the definitions, and 2, in the demonstrations.

In considering the definitions of geometry, it ought to be observed that the elementary conceptions of space do not ad-

mit of exact definitions in the sense of full explanations of the terms employed. The definitions are rather restrictions of the meaning of the terms. They presuppose a notion of the thing defined as already existent in the mind. To be good definitions they should call up a clear idea of the thing defined, either by mentioning its essential qualities or by precisely limiting the meaning of the terms denoting it.

Let me examine some of the definitions of "a straight line," one of the terms first defined in all geometries. In modern treatises a common definition of a straight line is "one which forms the shortest distance between any two of its points." It is a convenient definition and not a bad one. But it assumes that, all kinds of lines between two points being measured, the straight line will be found to be the shortest. It makes this fact the test of straightness, and thus introduces a quantitative idea into the definition.

Many writers define a straight line by means of an indefinite term of Latin origin, which conveys the same idea as the word straightness, and no more. Such writers say that a straight line "is a line which has the same direction throughout its whole extent." Standing by itself, and without explanation, it is really no definition at all, and would mean nothing to a beginner in the study, if not accompanied by other definitions of curved and broken lines, with diagrams illustrating them all.

Euclid[1] defines a straight line as one "which lies evenly between its extreme points." This definition brings before the mind the essential characteristic of a straight line. To test the straightness of a rod or of the edge of any solid, the idea embodied in Euclid's definition is applied by the person making the test. At one extremity of the rod or edge he places his eye, and glancing over its whole extent he sees whether the intervening points are above, below, to the right or left of the line of vision. If they do not lie out of that line, they lie evenly between the two extremities, and the rod is pronounced straight, and the edge is a straight edge. The

[1] Todhunter's Euclid is the edition of Euclid referred to in this paper.

line of sight is assumed to be straight, and is taken as the standard line. Euclid's definition calls up in the mind the notion of straightness. It has in it no idea of quantity. It is qualitative. If now an idea of quantity is added, a non-essential element is brought in. This is done when a straight line is defined as the shortest distance between any two of its points, for the common idea of distance carries with it the idea of measure. The straightness of a straight line does not depend upon its length. Short or long, in whole or in part, it is still straight.

In the definition of a plane rectilinear angle most modern geometers do not differ essentially from Euclid. Some few, however, use the "direction" theory to such an extent as to call for some notice. The weakness of the theory of direction is its indefiniteness. This indefiniteness renders obscure all the principles intended to be derived from it. Thus a "plane angle" is defined as "the difference in direction of two lines." As, in the book giving this definition, hitherto direction has not yet been clearly defined, difference in direction is no clearer than the term direction. Moreover, as a "straight line" is defined as one "which has the same direction throughout its whole extent," and as it is afterward remarked "every straight line" "may be considered as having opposite directions," the beginner commences the study of geometry with no very clear ideas of the sense in which two important terms, straight line and angle, are used.

Modern geometries differ, however, from the ancient geometry, not so much in the essential definitions of the subject as in the arrangement and order of the propositions. With hardly a single exception they classify propositions, making their books comprise propositions arranged in some such order as this: Book I, the Straight Line, or Rectilinear Figures; Book II, the Circle, etc., etc.

Such a classification has its advantages in a book of reference, but in a book intended for teaching purposes it is out of place, since it interferes with the natural order of development of the subject.

To classify propositions in this artificial way, "hypothetical constructions" are required. In order to demonstrate theorems, it is necessary either to draw a line equal to another line, to make an angle equal to another angle, or to suppose such constructions made. In the ancient geometry constructions are taught at the very outset of the subject, and the postulates are the first principles applied. By the modern method the pupil is told *to make* a line equal to another line, an angle equal to another angle, or to suppose a line to be drawn bisecting an angle, etc., etc., without being instructed how to make these necessary constructions. These modern geometers, as a rule, do not condescend to inform the pupil what constructions it is possible for him to make. If they did impart that information it would be natural to look for such possible constructions among their postulates, after they have defined a postulate "as a construction admitted to be possible;" but they generally stick to the presentation of only three postulates; namely, those always allowed from ancient times. Having proved certain propositions by means of "hypothetical constructions," they then take up the problems on which the theorems really depend. They prove the problems to be done, according to theorems already proved by means of the problems. This may all be good classification, but it is not geometry. Neither is it good logic. The irony of the situation is made the more evident by these problems coming *after* the *circle*, thus suggesting the character of the reasoning.

In departing from Euclid's method of treating ratio and proportion, modern writers have wisely availed themselves of the arithmetical idea of ratio. Those who have applied the doctrine of limits to the development of the subject have generally presented it in a logical form. Sometimes, however, they forget the limitations of the application of their methods. For instance, under the theory of proportion, it is sometimes stated that:

"*In a series of equal ratios the sum of the antecedents is to the sum of the consequents as any antecedent is to its consequent.*" This is a true proposition applied to numbers, but is

not true of geometrical magnitudes unless these magnitudes are of the *same kind.*

Again, in more than one modern treatise on geometry, in order to prove the area of a rectangle to be equal to the product of its base and altitude, reference is made to the proposition that "*the areas of two rectangles are to each other as the products of their bases by their altitudes,*" making the former proposition depend upon the latter. To expose the fallacy of the proof it is necessary to state in full the demonstration of the theorem just quoted.

R and R' are two rectangles having for their bases b and b', and for their altitudes a and a'.

It is to be proved that

$$\frac{R}{R'} = \frac{a \times b}{a' \times b'}$$

Construct a rectangle S, with its base b, and its altitude=a'. Then

$$\frac{R}{S} = \frac{a}{a'},$$

since rectangles having equal bases are to each other as their altitudes; and

$$\frac{S}{R} = \frac{b}{b'},$$

since rectangles having equal altitudes are to each other as their bases.

By multiplying these last two equations, member by member,

$$\frac{R}{R'} = \frac{a \times b}{a' \times b'}$$

The fallacy lies in the last statement. The right-hand members of the two equations *can* be multiplied together, for a, a', b, and b' stand for *numerical measures* of lines, *i. e.*, for numbers; but the left-hand members have not yet been shown to be capable of being represented by numbers, and therefore *cannot* be multiplied together.

In point of fact the theorem immediately following the one just given attempts to prove that a rectangle can be repre-

sented by a number. In other words, supposing that the theorems under discussion are numbered 1 and 2, in the order of their arrangement in the book, 2 is proved by quoting 1, while 1 assumes 2 to be already proved.

If, under the general subject of ratio and proportion, it be first proved that "*The ratio of the first of three quantities of the same kind to the third is compounded of the ratio of the first to the second and of the ratio of the second to the third,*" the demonstrations of the propositions referred to are made complete. The writer knows of only one modern treatise on the subject which by inserting this link in the chain of reasoning, makes it faultless.

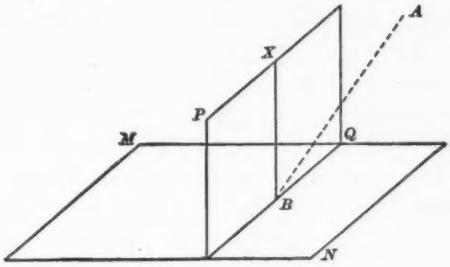
Another device of modern geometries is to put an important principle as a corollary of a proposition, constituting it a deduction or inference from the preceding theorem, when it is really a theorem itself, often requiring a demonstration more difficult than that of the proposition under which it appears.

For example, to quote from the best of the modern treatises known to the writer, the principle that "if two planes are perpendicular to each other, a straight line drawn through any point of their intersection perpendicular to one of the planes will lie in the other plane," is given as a corollary to the proposition, "*If two planes are perpendicular to each other, a straight line drawn in one of them, perpendicular to their intersection, is perpendicular to the other.*" To be sure, it does follow from that proposition, but not "as an immediate consequence" without demonstration. It really requires a proof by the method of *reductio ad absurdum*, in some such way as follows:

Let the planes PQ and MN be perpendicular to each other; and at any point, B, of their intersection, let a straight line AB be drawn perpendicular to the plane MN; then it will lie in the plane PQ.

For, if it does not lie in the plane PQ, suppose, if possible, it lies outside of that plane, and take the position in the figure. Then in the plane PQ, a line BX can be drawn perpendicular to the intersection BQ of the two planes, and therefore, by

the proposition, perpendicular to the plane MN. That is, at the same point B, in the plane MN, *two* perpendiculars, AB and BX, have been drawn to the plane. But this is impossible, according the principle already proved, that "at a given point



in a plane a perpendicular can be erected to the plane, and but one." Therefore the line AB cannot fall without the plane PQ, but must fall in it.

To teach abstract logic to boys is as difficult as to teach them metaphysics, and for the same reason. The mind of a boy at the age at which he generally takes up the study of geometry, is not sufficiently advanced to grasp the study of either logic or metaphysics. It is possible to teach him practical logic by teaching him to reason about the science of geometry from a few accepted principles of the dimensions of space. And the development and right use of his reasoning powers attendant upon the study of geometry are a more important object of the study than increasing his store of knowledge. To introduce into his mental life a false method of reasoning entails more serious consequences to him than insufficient knowledge, for it is easier to make acquisitions than to correct a habit. The bad habit will remain in his mental processes long after all traces of the acquired knowledge are lost. The beginning of the study is, therefore, the critical period.

Geometry is especially fitted to teach a practical logic. The elementary principles essential to a thorough prosecution of the study are few. They are also easily comprehended if properly presented.

In this presentation of the principles we should include: 1, definitions; 2, axioms; 3, postulates.

1. It is not necessary to give definitions of all the terms at the outset. It is better to define terms when they are needed for use. For instance, parallel straight lines need not be defined till the subject of parallels is treated. The definitions ought also to be accompanied with diagrams illustrating the terms defined, if these denote geometric magnitudes. In some cases explanations ought to accompany the diagrams. If the subject were developed according to Euclid's method, in addition to definitions of "problem," "theorem," "axiom," etc., there would be needed, in the beginning, definitions only for the following geometric terms, viz., point, line, straight line, surface, plane surface, angle and plane angle, right angle, acute angle, obtuse angle, figure, triangle, isosceles triangle, equilateral triangle, and circle.

2. All the axioms need not be stated at once, or, if stated, need not be learned till a practical application is made of each. Euclid's axiom, that "All right angles are equal to one another," is not required for use before proposition 14 of his first book. Also the axiom, "If a straight line meet two straight lines, so as to make the two interior angles on the same side of it, taken together, less than two right angles, these straight lines, being continually produced, shall at length meet on that side on which are the angles which are less than two right angles," is not required till proposition 29, book 1. If stated *after* proposition 28 it would be easily understood. Stated there it meets the pupil after he is familiarized with the relations of parallel lines to a transversal.

3. The usual three postulates furnish the pupil with the constructions necessary to the development of the subject. It would seem that the postulate "That a circle may be described from any center at any distance from that center," might obviate the necessity of requiring the second and third propositions of Euclid's first book.

Having the meaning of the terms employed limited by the definitions, and having been made familiar with the allowed

constructions and with the general principles of quantity, the pupil is prepared to develop the subject in the natural way. He has placed before him a few terms easily understood; a few admitted principles; and a few simple constructions. By the ancient method as given in Euclid, he is taught at the very outset to solve a definite problem. He begins immediately to use his knowledge for a definite end. Applying the postulates to the use of a straight edge (ruler) and a pair of dividers he trains his hands and eyes to do nice work. He trains his reasoning powers by proving that the solution of the problem is correct. He does not depend upon memory alone. He uses powers of mind and body. He takes no forward step without a reason. He makes no construction without clearly perceiving that he has a right to make it. If he be properly taught he will proceed with the study pleased with his complete mastery of every step, and delighted with the exercise of his own powers in gaining this mastery. To encourage this state of mind it is well to invite the pupil, as early in his course as possible, to solve the problem presented to him, and to demonstrate the theorem proposed by his own methods. To this end, also, it is best at all times to give exercises for original work, grading them and grading the hints for the solution of them according to the learner's experience and ability. After going through the first book of Euclid in this thorough way it will be found that he has acquired a knowledge of the subject matter of that book worth more than the time given to it, and has acquired a method of reasoning of infinitely more value than the knowledge gained.

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IV.

RELIGIOUS INSTRUCTION IN STATE SCHOOLS.

Bishop Spalding's article on this subject in the EDUCATIONAL REVIEW for July, 1891, has so much in it with which all teachers must agree, that it seems to me desirable to find out exactly where there is disagreement, and to ask whether it would not be possible to reach a common platform. He indicates generally the positions on the subject held by the Roman Catholic Church, by the mass of the people, and by Atheists, rightly including in the last class not only those who say that there is no God, but Positivists and Agnostics who say that we cannot know that there is a God. We may, at the outset, clear our ground by ruling out this class, simply because our object is to find a practical basis of settlement, and, in English-speaking countries at any rate, the Atheist gives no educational trouble, except to theorists. Among parents he is almost as non-existent as the dodo of Mauritius or the moa of New Zealand. If a member of this unfortunate class crops up in a school district he is likely to be treated with more justice than would have been shown him in the good old times. Certainly, if he is to be converted, he must be treated with the justice and love which Christianity enjoins. His children should not be required to join their schoolmates in singing "God save the Queen" or "Hail Columbia," because their father has doubtless taught them that it is wrong to pray or to declare that "In Heaven we place a manly trust." No one would object if he wished to register his son by the name of Paine or Ingersoll or his daughter as Lassalline Babeline after Lassalle and Babel, the socialists, though Prussian law has decided that he must not do so in that Christian country. But, on the universally recognized principle that *de minimis non curat lex*, the general school system need not concern itself with possible exceptional cases. The good

sense of the people may be trusted to deal with these rightly, when they occur. On this continent, the principle of live and let live is pretty well understood and acted upon in every community. As long as a man plays the part of a good citizen there is the widest acknowledgment of his rights, and the fullest toleration for his theoretical absurdities, by his fellow-citizens.

With regard to the other extreme position, or the Roman Catholic view of the school question, the Bishop says that it "is as clearly defined as it is well known," but, unfortunately, he does not state explicitly what it is. On the contrary he confuses it with the view held by the mass of the people. Almost everything he says about it would be accepted readily by the average Protestant, who, moreover, would never dream that his acceptance of the premises shut him up to believing either that the Roman Catholic Church "is the divinely appointed agency to help him attain his supreme destiny," or that "the denominational system of popular education is the right system."

The ordinary American Christian would reject both conclusions and maintain that they had no connection with the premises. He would do so with remarkable promptitude, if either conclusion were used to establish the position that the Church should control the schools, appoint the teachers, and select the text-books. He might be willing to admit that the Roman Catholic Church is *a* divinely appointed agency, but as he believes that there are other agencies of the same kind, his own Church in particular, not to speak of the family and the state, he does not understand why there should not be friendly coöperation, on the principle of division of labor, between the various agencies. He is even apt to suspect the man or the Church that, refusing all coöperation, tries to put him on the horn of the dilemma, godless or sectarian, and he sometimes rather bluntly ascribes the refusal to a preference of personal or sectarian interests over those that are national and human.

Let us consider more in detail the lofty views of education

set forth, and see whether there is no other way of promoting them but the denominational system. They are implied all through the article, but the passage referring to what is called "the Catholic view of the school question" may be quoted as an excellent summary of them. The extract is somewhat long, but it is so good that I am reluctant to abridge it. "If education is a training for completeness of life, its primary element is the religious, for complete life is life in God. Hence we may not assume an attitude toward the child, whether in the home, in the church, or in the school, which might imply that life apart from God could be anything else than broken and fragmentary. A complete man is not one whose mind only is active and enlightened; but he is a complete man who is alive in all his faculties. The truly human is found, not in knowledge alone, but also in faith, in hope, in love, in pureminded-ness, in reverence, in the sense of beauty, in devotedness, in the thrill of awe which Goethe says is the highest thing in man. If the teacher is forbidden to touch upon religion, the source of these ideal virtues and moods is sealed. His work and influence become mechanical, and he will form but commonplace and vulgar men. . . . . Religion is the vital element in character, and to treat it as though it were but an incidental phase of man's life is to blunder in a matter of the highest and most serious import. Man is born to act, and thought is valuable mainly as a guide to action. Now, the chief inspiration to action, and above all to right action, is found in faith, hope, and love, the virtues of religion, and not in knowledge, the virtue of the intellect. Knowledge, indeed, is effectual only when it is loved, believed in, and held to be a ground for hope. Man does not live on bread alone, and if he is brought up to look to material things, as to the chief good, his higher faculties will be stunted. If to do rightly rather than to think keenly is man's chief business here on earth, then the virtues of religion are more important than those of the intellect; for to think is to be unresolved, whereas to believe is to be impelled in the direction of one's faith. In epochs of doubt things fall to decay; in epochs of faith the powers which make

for full and vigorous life hold sway. The education which forms character is indispensable, that which trains the mind is desirable. The essential element in human life is conduct, and conduct springs from what we believe, cling to, love, and yearn for, vastly more than from what we know. The decadence and ruin of individuals and of societies come from lack of virtue, not from lack of knowledge. 'The hard and valuable part of education' says Locke, 'is virtue; this is the solid and substantial good, which the teacher should never cease to inculcate, till the young man places his strength, his glory, and his pleasure in it.'" (Pp. 115–117.)

All this is excellent, as well as eloquently put. What is more to the purpose, it would be accepted as true by the great mass of the people. It presents the right ideal of education, and the ideal to the attainment of which the best teachers, as well as the masses, are struggling.

"Americans are a Christian people," the Bishop has no hesitation in affirming. So are Canadians, and so are the people of Great Britain and Ireland. So long as we confine the "indispensable" in education to what Goethe calls "the thrill of awe," and Locke "virtue," and Matthew Arnold "conduct," and Bishop Spalding "religion," if by religion is meant—as I assume from the passage quoted—the thrill of awe, or virtue, or conduct, or even what are said to be the prerequisites of Protestant religious belief, "the dogmas of the existence of a personal God and of an immortal human soul," there is no practical difficulty whatsoever. The people desire to get the best teachers that can be enticed into the profession for the small salaries they pay, and it is doubtful if there is a single school district that would elect an atheist or consider him fit to teach children. Those teachers they consider best who not only teach the three R's well, but who inspire their pupils, interest them in what they read, touch their emotions, feed their imaginations with proper food, set before them true ideals of character, and, by rooting in them habits of order, accuracy, courtesy, truthfulness, self-reverence, and reverence for the highest, train them to virtue and fit them for conduct.

Now, the question that I would like to have answered is this—Is the man or woman who does all this successfully entitled to be called a religious teacher, or is it necessary, in order to be considered worthy of such a title, that he should have been appointed by some church and that he should devote a longer or shorter period of the usual school hours to prescribed religious exercises and catechism drill? The answer to this question will depend on our conception of religion. If we are in any way in bondage to the mediæval notion of an antagonism between the sacred and the secular; if devotion to the study of nature, of society, of the state, of art, of industry, or the discharge of ordinary duties is a turning away from the religious life; if religion means ritual or the inculcation of texts and dogmas under the supervision of ecclesiastics or semi-ecclesiastics, then the answer will be along one line. But, if we are in sympathy with the modern movement of humanity, if we conceive of the supernatural world not as distinct from and unrelated to this, but as the present world in its ideal aspect, if we believe that a man shall be in the future world what he is now and, therefore, that character and conduct are not merely three-fourths of life, but the whole of life; and that they are determined by the degree in which we breathe of the spirit of faith, hope, reverence, and love, then the answer will be along another line. In thus distinguishing between mediæval and modern conceptions, I have no intention of speaking disparagingly of the Middle Ages. They were a necessary period in the evolution of the nations that constitute modern Christendom. They do not deserve to be called either "the Dark Ages" or "the Ages of Faith," as they have been styled by opposite schools. Admittedly, however, the tendency then was to separate the Church from the world by an impassable gulf, to set up a church within the Church, and to distinguish the Saint from the ordinary Christian. The world was defined not as "everything which is not of the Father," but rather "everything which is of the Father," for it included the family, the state, and all the relations of life, with their hallowed ties and obligations and the daily work and human sympathies

connected therewith. These sharp contrasts tended to Manicheanism, though the spirit of Christianity checked the tendencies and prevented them working out their natural development.

Successive reforms, social, political, and religious, continually threw men back upon the first principles of Christianity, though it remains on the whole true that eternal moral distinctions were obliterated and fictitious standards introduced that exercised a disastrous effect on priest and layman alike. "The noble, looking upon religion as a thing apart, could one day stab his friend to the heart, and the next compound with heaven by an external penance; the clergy too often perverted religion into a dead formalism and a superstition." Modern life has changed all that at any rate. It believes that there is one righteousness for all, and that the essence of religion is to imitate the Master in daily life. No wise man despises dogma, but he puts it in its right place. Man must theologize, but theology is for scholars and not for babes. We know also that the spiritual transcends dogma, and we refuse to identify religion with any complications of dogmas, whether made at Trent, Augsburg, or Westminster. We do not believe that morality is independent of religion, but as we see morality manifesting itself with equal vigor and loftiness in connection with different creeds, we refuse to identify it with this or that special form that the intellect in different countries, ages, and circumstances may have put together for its own satisfaction.

Neither have I any intention of disparaging religious exercises or positive religious instruction. It is very desirable to open and close the school with prayer and to teach the pupils judiciously selected passages from Holy Scripture, unless the one exercise or the other is used as a means of introducing or cultivating the spirit of sectarianism. In that case something very different from the spirit of Christ is fostered, and in the interest of religion it would be better to dispense with both exercises. It seems to me that a good school system will leave as much as possible in this respect to local action. State centralization may be as bad in one way as ecclesiastical domination in another. Though the common school has now

largely passed into the control of the civil government, it does not follow that there is nothing for us but bureaucracy. The state is simply the people in their civil capacity,—the same people, that is, who constitute the churches,—and the school has passed under their control, partly because the unity of the people has been preserved in their civil and not in their ecclesiastical relations, but local action—it must never be forgotten—is the very life-blood of civil freedom. When the state as a whole has made provision for the erection of school-houses in every district, and for the payment and inspection of teachers, and when through a properly constituted department of education it provides good text-books and sees to the training and certificating of teachers, a few general regulations are sufficient for administering the system, and the more seldom these are changed the better. Everything else may be left to the local trustees who represent the parents, and who, as a rule, are willing to take advice. They appoint the teacher and will not reappoint him if he fails to give satisfaction. The difficulty of imparting religious instruction in the common school arises from the division of the community into sects, and because of the dogmatic point of view from which they are all inclined to regard the Bible. To the Jewish rabbis the foundation of all Scripture was the Law, and so the whole Old Testament came to be regarded as law and to be interpreted as a statute book. They thereby made void the law itself and turned the prophecies into riddles. The same Jewish point of view has too often been adopted by the churches, and without the excuse which the rabbis had; for not till the time of Jesus was the new covenant introduced, which Jeremiah had foretold, a covenant the essence of which consisted not in external commands, even though these were written on God-given tables of stone, nor in external obedience, but in a new heart and a living relation to the living God. "After these days, I will put my law in their inward parts and write it in their hearts, and I will be their God, and they shall be my people." Now, one of the gravest evils that has resulted from the Rabbinical method of regarding the Bible is that it

is made a sectarian book, and, therefore, those who hate and dread sectarianism, some for good reasons, others for reasons not so good, unite to demand its exclusion from schools to which they are forced by the state to contribute. Their position is logical and unanswerable, but let us put the blame on the right shoulders. It is, indeed, a melancholy *reductio ad absurdum*, when, in the interest of justice, we are compelled to turn the Bible out of the school, or to have it read as a fetich, without note or comment. Children will get little good from reading the Bible in school if the teacher is not free to explain it or answer questions, as he would with regard to any other book, and a teacher that could not be trusted in this matter could hardly be trusted in anything else. Even if the Bible is not studied in the schools, in consequence of the wrong attitude toward it of some people or the wrong-headedness of others, it does not at all follow that the school is therefore secular. The teacher will always be valued and honored, according as he brings religious motives to bear on his scholars and influences them to right conduct. The most successful teaching of the letter may kill, but the spirit invariably gives life; and the teacher who is helpless religiously, because unfurnished with a text-book, is not the man likely to do much good with the most orthodox catechism, even should he enforce it, as its teaching used to be enforced, with the rod or the aid of the fool's cap for the dunce.

Those who are opposed to secular schools or to laws—if there be any—that forbid appeals by the teacher to religious motives and sanctions, must have as their ultimate aim either the securing of religious instruction in all the schools of the country or the obtaining of separate schools, under the control of their Church, for a handful of the people. Surely the former is the nobler aim. It should inspire every lover of his country. It must appeal to a man who writes with such an appreciation of the modern spirit as that which is manifested in almost every page of the article to which I am referring. If the deeper tendency of the present age is not "to exclude religion from any vital process, but rather to widen the con-

tent of the idea of religion until it embraces the whole life of man," then, seeing that humanity is not merely a collection of separate units but a social organism, it is our duty to interpenetrate that organism, as a whole, with the true idea of religion. We can do so only by educating the children together, that they may instinctively learn their duty to the whole. Besides, this is a case in which it is easier to get the whole than a part. Separate schools for Roman Catholics do indeed exist by law in two of the seven provinces of Canada. In one of these, Quebec, where the immense majority of the people are French-speaking and devoutly Roman Catholic, the school system is frankly dual. There are two Councils of Public Instruction and two Superintendents. In the other, Ontario, so well satisfied are the people with the public schools that only a minority of the Roman Catholic children attend the separate schools. The law enacts, negatively, that "No person shall require any pupil in any public school to read or study in or from any religious book, or to join in any exercise of devotion or religion, objected to by his or her parents or guardians"; and, positively, that "Pupils shall be allowed to receive such religious instructions as their parents or guardians desire, according to any general regulations provided for the organization, government, and discipline of public schools." By the separate school law, "Those Roman Catholics who desire to establish separate schools may do so where they are strong enough to support them, but it is a principle of the bill that the individual ratepayer has the option of supporting them or of withdrawing his support. None can be supporters except Roman Catholics of the neighborhood, and they are then exempted from certain school rates. The trustee elections are similar to those of public schools. The teachers are to be duly certificated, unless they belong to religious communities. The schools share in the legislative grant in proportion to their attendance." It has always seemed to me that in the circumstances of old Canada, the concession of separate schools was expedient. It was a political necessity, for at the time the Roman Catholic laity was a unit in favor of the proposal.

But the experiment has not been so successful as to lead to its imitation in the other provinces. Even in Ontario a strong feeling has recently developed aganist it, on account of various causes that need not be enumerated here; but no attack will be made on it by any political party as long as Roman Catholic laymen continue to be practically unanimous in supporting the system.

Evidences, however, are not wanting that they are beginning to fancy that the separate is inferior to the public school and that their children are thereby handicapped for the battle of life. This suspicion is likely to lead to a rivalry between the two classes of schools which will be wholesome to both, and it is likely to keep the separate schools from unduly increasing in number. There are teachers in the public schools who need stimulus of rivalry. It is evident, however, that as national feeling grows stronger than class, race, or sectarian prejudice, the argument in favor of having all the children of the community educated together will tell with increasing force. In a country where national feeling is strong and where democracy is all-powerful, the stars in their courses fight against the separate school. No wonder that not one of the United States, "has attempted to introduce the denominational system of education." I do not underrate the influence of the Roman Catholic Church, but in its own interest and in the interest of those great truths which it professes to guard, its wise men should see that it will spend its strength in vain in a crusade against the common-school system. It is not because of "their jealousies and rivalries" that the Protestant Churches must oppose such a crusade. It is not a fair way of putting it to say that they are "willing to forego favors which they could not receive without permitting the Catholic Church to participate also in the bounty of the Government." They know, and the people and all statesmen know, too, that the public school is a basal necessity of government by the public. The public school is a political necessity, and that fact puts an end to every argument and is at war with every tendency that would cripple it or make it less extensive than the whole people. It is, indeed,

true that the state should seek to reach not merely the development of the intellect, but the full development of all the faculties and the character essential to the highest ideal of modern citizenship, but it must do so through general and not denominational action. To give "the bounty of the Government" to one Church means that the same bounty must be given to all Churches. Rather than submit to such a division of the common fund among "jealous and warring sects," even jealous Protestants would prefer to have the schools as undisguisedly secular as are the workshops, the mines, or the factories to which their children must go—often at a pretty early age—to complete their education and to earn their bread. They do not see why they should decline the coöperation of the state or decline to allow that divinely appointed agency to attend to one side of education—if nothing better can be had—while, the home, the Church, and the Sunday school attend to the other side. That such a division of a work which is in essence one, is arbitrary and not unaccompanied with evils, they generally recognize. More, they do not see any real necessity for the division, and they accept it only that they may avoid greater evils. A Christian people should have a far higher ideal than that of the mere secularist. To the question, "Shall we thrust from the school the one ideal character who, for nearly nineteen hundred years, has been the chief inspiration to righteousness and heroism," they would answer No, and they would follow up their answer by asking for the proof that denominational schools are necessary, in order that His word should be read and His example held up for imitation. Is Christ divided? Is he not the same for all the Churches and all the people?

Our duty, then, is to combine in order to make the common school religious as well as secular. To this end we must secure the best possible teachers and the best possible textbooks. Working along these lines, the Roman Catholic Church could do an unspeakable service to the country, a service, it may be added, that the state has some right to expect at its hands, seeing that so many of the ignorant masses that

threaten civilization on this continent are from foreign Roman Catholic countries. Of course the supreme difficulty is to get good teachers in sufficient numbers, for the Bishop is right when he says that "the teacher makes the school." Not only is the salary of the public-school teacher small, his work monotonous, and his place in society of little account, but his tenure of office is insecure, and he is often hampered by multiplied and vexatious regulations. Hence the necessity that all friends of education should coöperate in the great work of securing the best training for teachers and of securing an honorable place in society for them. It is a mistake to attempt too much or too many things in the common school. To attempt to teach subjects for which there are not qualified teachers is a greater mistake. For instance, history should be taught so that every citizen might know something of the causes that determine the rise and fall of nations, and might be in sympathy with all that is glorious in the history and aims of his own nation. This would mean a teaching of morality and of the great facts of the spiritual world as well as history. But how can raw lads or slips of girls who have no conception of what is meant by the life of the race, who have never come in contact with cultured minds, and who get their certificates by passing examinations on text-books they have hastily crammed, rise to this elevated point of view? The remedy must be along the lines of inducing teachers to take a partial or full university course, as they do in the northeastern counties of Scotland, where good salaries are paid, and of imitating in the common schools the German system of teaching history. There the famous stories of classical times and the biographies of eminent men in different nations, especially their own nation, are read, and a basis of comparison is laid by instruction in the Old Testament histories. The comparative method of study is the modern method in all subjects, and nowhere is there a better basis for historic comparison than in the brief sketches, written from an ideal standpoint, which we find in the Books of Samuel and Kings. These sketches and summaries combine pregnant and glowing reflection with

all the charm of concrete details. Of course, if the Bible be regarded as a collection of mysterious oracles, to be hidden in the recesses of the sanctuary or to be received by the people in unquestioning silence, it cannot thus be used in the school. But by this method of studying history, children do unconsciously get hold of links of connection between history on the one hand and geography, literature, and life on the other. Their learning—whether it amount to much or little in quantity—will prove of permanent interest and value. They will be led to think of other nations and generations in relation to the actual boys and girls and men and women with whom they live, instead of misconceiving them as algebraic symbols or as mere "pagans," a section of humanity with which they feel that they are not expected to be in touch. The difficulty of teaching literature to children is, perhaps, greater than that of teaching history itself, and the usual mistake is in being too hasty and too ambitious.

Instead of Mr. Gradgrind's "facts" about battles, kings, queens, and presidents who might well be forgotten, or the arid definitions of Mr. McChoakemchild, let them have books like Hans Andersen's, *Robinson Crusoe*, Plutarch's *Lives*, and Scott's poems or novels. Children must be interested, and they can be interested only through their imaginations. The Synoptic Gospels and other selections from Scripture would not be objected to by one school board out of a thousand. "The best literature for children from their seventh to their fourteenth year," says Rosenkranz, "consists always of that which is honored by nations and the world at large," and if the books which I have ventured to mention are set aside, let us try to unite on others that have stood the test of time and a jury wide enough to be representative of universal humanity. The aim of the common school is not to make theologians or bigots, but to make children happy, healthy, and natural; courteous, obedient, and reverent to the highest; to give them a love for their country and for one another; to open their eyes to the beauty of nature and the meaning of life; to give them a love for reading and a taste that will enable them in some

degree to discern good books from bad; and to form in them habits that will make the end of their school days to be but the beginning of their education.

Surely there is here an elevated platform, on which all may stand in the unity of a common faith in God and a common service for man. Our appeal must be to the general reason and conscience, and our success will be just as far as the people are convinced of our sincerity and our sense. In aiming at our ideal we shall always carry with us the one comforting thought that every parent, every patriot, and every statesman must be on our side. No one desires a bad education for his children. Theoretical difficulties may be raised by unbelieving writers, but convince the people that you have no intention of breaking up the public-school system, and, sooner or later, they will listen to you, and second every effort to make it more beneficent and more human.

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V.

DISCUSSIONS.

ON PERMITTING STUDENTS TO TAKE STUDIES IN PROFESSIONAL SCHOOLS WHILE PURSUING A REGULAR UNDERGRADUATE COURSE.

This question is distinctly one of practical, and not merely theoretical, importance. It relates to a condition of affairs that has gradually, almost imperceptibly, come into existence at the universities and colleges whose organization includes one or more professional schools. Its significance, however, is not confined to institutions of that class and grade. Every college, however small or distant, some of whose students look forward to the study of law, medicine, theology, or applied science, after graduation—and where is there a college that will not be included in such a description?—is directly interested in the answer that this question receives, for reasons that will presently appear.

Two distinct points are involved: (1) the advisability of allowing students to pursue certain studies usually called professional, as part of a regular undergraduate course for the degree of Bachelor of Arts; and (2) the advisability of counting such studies as part of the equipment for two degrees, the general degree of A. B. and the special or technical degree in law, medicine, theology, or applied science. My own conviction is that both courses of action are not only advisable, but desirable. The grafting of certain preliminary professional studies on the undergraduate course will (1) still further enrich the courses leading to the A. B. degree, (2) stimulate professional education and render it more liberal and less formal and pragmatic, (3) meet the demand for a shorter period of study in college and professional school combined, without sacrificing the interests of either.

The strong and steady tendency away from narrow and strictly required courses of study, and the introduction of the group and elective systems, have greatly enriched and dignified the degree of Bachelor of Arts. That historical degree no longer stands for a single and necessarily one-sided sort of

mental cultivation. Its possibilities are now almost infinite, while the general balance, between the studies pertaining to man and those pertaining to nature, is well preserved. One by one the natural sciences, the modern languages, the historical and political sciences, and the ancient languages other than those of Greece and Rome, have been admitted to the undergraduate curriculum. This has been a distinct gain to scholarship and to many-sided intellectual training. Why, then, should the learned professions not be permitted to make their contribution? The very adjective "learned," so often and so familiarly applied to them, indicates that the professions are not based upon some peculiar technique or form of knowledge that is out of all relation to general human culture. While, of course, their applications lead into a region that only the highly trained specialist can explore, their whole theoretical basis, their scientific side, is merely a branch or limb of the great central trunk of learning. The learned professions participate, therefore, in their less technical parts at least, in those permanent elements of discipline and culture that distinguish the so-called liberal studies—those worthy of a free man, as the ancients put it. This simply means that any broad and liberal plan of professional study contains subjects that have a value as part of a general education, entirely distinct from their significance as *Propaedeutik* for technical practice. Some institutions of the first rank have practically borne witness to this fact, although without raising the specific question now under discussion. An examination of the most recent catalogues of Harvard, Yale, and Princeton shows that the following subjects, all of which are to be found on the programmes of the professional schools of the first rank, are open to undergraduate students: common law, municipal law, constitutional law, history and institutes of Roman law, public international law, and history of diplomacy, on the side of public and private law; physiological chemistry, anatomy, histology, and embryology, on the side of medicine; and church history, history of religions, Old Testament legal literature, history of Israel, science and religion, Hebrew, Biblical Aramaic, and Arabic, on the side of theology. It will not be denied that all of these are fit subjects for college study, or that the A. B. degree is not fuller and richer for their presence in the curriculum. It is just these studies, and others like them, that it is now proposed to allow formally to

count toward the degree of A. B., even though they constitute part of a professional course as well.

The action proposed will also affect professional education itself favorably. It is a melancholy fact that hitherto the standards of professional education in this country have not been high. Proprietary schools, run for revenue only, and the lack of a strong, intelligent public sentiment as to what amount of general education should be demanded of lawyers, physicians, and ministers, have combined to make it possible for illiteracy and a professional degree or license to go hand in hand. The universities have set themselves to correct this evil, so far as their example and authority can do so. Obviously a university is not doing its ordinary duty, much less aiming at a high ideal, when it allows its professional schools to be used as mere hothouses to force immature students up to a point where they can just pass the minimum requirements for a license to practice. Unless the professional schools of a university are broad in scope and liberal in spirit, and unless they insist upon a reasonable amount of general education as a requisite for admission, they are open to the severest criticism. Yet the material demands of our time and the constant clamor for strictly utilitarian work in professional schools, and as little of that as possible, are a strong force in the opposite direction. It is the privilege and the duty of the great body of arts and sciences that the Germans group together in their Philosophical Faculty, to render needed assistance in liberalizing and broadening the professional studies. The presence of the two in the same university organization means much ; their interdependence and close coöperation in the way indicated means a great deal more. The student who lives in an atmosphere of literature, art, science, and philosophy, can hardly pursue his professional course in an unthinking and routine way.

This plan will also meet the demand for a shorter period of study in the college and professional school combined, but without sacrificing the interests of either. The professional course will occupy three years as now, and the course for the A. B. degree will remain the traditional four years in length. Neither will lose; rather both will gain. That this is a very real advantage will be readily recognized by those who appreciated the full meaning of the movement for the shortening of the college curriculum, which reached its greatest force and velocity about one year ago. It is an ad-

vantage which will promptly be seized, especially by those who are looking forward confidently to the day that we all hope for, when the university will shut out absolutely from its professional schools all those students who shall not have had a college course for at least two, and perhaps three years.

Both at Columbia College and at Cornell University the step contemplated by the title of this discussion has been taken. The senior in Columbia College is required to pursue studies that secure his attendance for fifteen hours each week. In May, 1890, the action was taken that permitted a portion of this time to be devoted to subjects in law or in applied science. Ten of the fifteen hours may be spent in the study of law, or the entire fifteen may, if the student desires it, be given to applied science. It is a perfectly safe prophecy that in the near future the same option will be accorded in the case of medicine, and perhaps in that of theology as well. In the academic year 1890–91, 17 seniors out of 50 who were candidates for the degree of Bachelor of Arts, took advantage of the new arrangement to study law, and 23 applied science. In 1891–92 the numbers are 12 and 21 respectively, out of a class of 37. No objection to the plan has been raised in any quarter, and those charged with its immediate administration agree that it works admirably.

Cornell University has, by recent legislation, taken the same position on this question. Either juniors or seniors in good standing are permitted, under appropriate restrictions, to elect studies in the Law School. As at Columbia, such studies form part of the work of two degrees. At Cornell, however, this formal action cannot be called a change in policy, as was the case at Columbia, because for years past—as the Dean points out in his report for 1890–91—students in the general courses have been permitted to elect special work in the technical departments.

It is also asked whether, if the policy indicated is to be generally entered upon, the student should be permitted to count the professional, or so-called professional, studies chosen by him as part of his undergraduate course, for both degrees, the general and the special. I cannot regard this question as worthy of either serious or prolonged discussion. A degree is an entirely arbitrary symbol. It is granted or conferred when the work required for it is completed. If a student completes successfully the work required for two degrees or ten degrees, why should he not have them? There is a curi-

ously perverse tendency in this country to magnify degrees and regard them as ends in themselves, while conferring them lavishly alike upon the just and upon the unjust. I am unable to share that view; and looking upon them merely as symbols, can see no good reasons for withholding a degree simply because part of the work done for it was at the same time part of the work required or counted for another. At Columbia the work done for the degree of Master of Arts counts toward the degree of Doctor of Philosophy, and work done in the Union Theological Seminary for graduation, is counted as part of the equipment for the higher academic degrees. At Harvard the course in the Law School counts at once for the degree of Bachelor of Laws, and, if completed with distinction, for that of Master of Arts as well. Doubtless instances might easily be multiplied.

The most far-reaching consideration in connection with this discussion is, however, the effect of the adoption of this policy on the smaller colleges, those that have an academic course only and no professional schools. Frankly, I think that the effect will be to draw off students from the colleges to the universities at about the end of the sophomore or junior year. A student can save time and broaden his opportunities by transferring himself to the university at that point. This differentiation between the college and the university must come; it is coming every day. During the last generation the college has been pushed too far upward. The waste of time in the lower schools, and the great pressure of new subjects of study, have caused this. Now that the university has been developed, however, the same reasons are no longer operative. The college can begin its work earlier, by resting its freshman year upon the public high school, instead of leaving a gap of a year and a half, or two years, between them. It can retain its four years' course, and yet yield its students to the university at eighteen or nineteen. Its treasury will not be depleted nor its influence diminished. Not only because the plan under discussion commends itself as right and advisable, but because it will hasten the readjustment of our institutions for higher education on what seems to me a wiser and more efficient basis, I am unreservedly in its favor.

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THE POLICY OF THE SMALL COLLEGE.

President Hyde of Bowdoin College has defined in a recent number of the EDUCATIONAL REVIEW [1] the motives and principles which should govern the policy of the small college. His treatment of the subject is very satisfactory to many who have the interest of the small college at heart. He has been modest in his claims, lucid in statement, and candid in dealing with a somewhat difficult theme, but he has failed to take due account of one tendency of popular thought which, it may safely be said, is destined to influence, more than any other one thing, the future administration of higher institutions of learning. He has omitted to notice, other than by remote implication, the great and increasing demand for practical education.

There can be no doubt, in the mind of any person having access to educational statistics, that technical schools are rapidly winning their way to popular favor, if, indeed, they do not already possess it. The percentage of secondary school graduates to enter such institutions is on the increase, and there are not wanting those who predict that, unless some measure is taken by college authorities to check the movement toward a departure from the pursuit of the traditional curriculum, the small college must consent to take a second place in our educational system uncomplimentary to its policy and injurious to the cause of education in general.

The present appeal for departure from an old standard is not a repetition of the trite cry for "something practical," which has usually come from men of small education, unable to appreciate the studies they profess to hold in slight esteem. It is the persistent solicitation of intelligent and cultivated men, college graduates, who take an interest in these matters because they have children to be educated. Such men are sending their sons to technical schools, instead of to college, and they often do this not because the training of the technical school is just what they would have it, but because, of the two extremes of which the college represents one, that of the technical school seems less objectionable.

Nobody doubts that a liberal education is a priceless blessing to any man. Few there are who do not acknowledge the inferiority of technical training, taken by itself, to the discipline of the conventional college routine. But there are many

[1] II: 313.

who ask themselves the question, "Is liberal education incompatible with practical education?" and the small college must prepare itself with an answer before it is many decades older. The technical schools are ready with their reply now and point to their graduates, who, it is true, are, in most cases, able to hold their own when associated with college men in society.

The problem, as it presents itself to many, is not, however, liberal education *versus* technical education. Practical education is the thing desired, and a practical education is not, necessarily, technical. The distinction is easy to perceive, but more difficult to explain. "Practical" stands midway between "liberal" and "technical"; it is a happy medium and combines the qualities of both. It may, perhaps, be best made clear by the aid of concrete examples:

A practical knowledge of Latin implies the ability to translate Latin phrases of frequent occurrence and to interpret, off-hand, unfamiliar Latin derivatives. Not every college-bred man can meet these requirements.

A practical acquaintance with French or German means that the possessor can converse, on ordinary topics, in the language and can read, at sight, the works of all but the most obscure native writers. Few college graduates would undertake to do either of these things.

A practical education in chemistry provides a man with methods for the detection of common food adulterations and poisons, and prepares him to understand sanitary reforms.

Such being the nature of a practical education, it is evident that, to meet the conditions, the present policy of the small college need not undergo extensive revision. The college is not to be transformed into a technical school, nor is the present schedule of studies to be fundamentally altered. The courses must, simply, be made valuable from a common-sense, everyday point of view. English must train for journalism, the pulpit, and the bar, in a distinct and thorough manner not at all allied to present methods. Chemistry must solve problems in drainage, ventilation, and water supply. Physics must abound in practical lessons in mechanics. History and political economy must fit for citizenship and politics.

And all this can be done without prejudicing liberal education, a term which has too long connoted impracticality. The small college should provide an education which, while it broadens the sympathies, deepens the mind, and liberalizes

thinking, at the same time possesses a utility value. There are no contradictions in such a project, for "liberal" and "practical" are not mutually exclusive.

Let the small college so modify its courses that the attainments of its students are more than accomplishments, and its high position in our educational system will be maintained. It will then be better able than ever before to graduate men "whose knowledge enables them to grasp the principles of medicine, or law, or politics, or theology, to guide social progress and form public opinion," and "to enjoy the companionship of wise and good men of all lands and ages."

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FREE DINNERS FOR SCHOOL CHILDREN.

Everyone is more or less touched by anything painful in the condition of a young child. But that a considerable number of children are exposed to the chronic pressure of insufficient food and insufficient clothing is a fact which we are sometimes compelled to recognize. And the obvious cause of so deplorable a state of things is that those children do not receive from their parents the treatment that we should all wish them to have. The parents are either to be pitied or to be blamed; they are either too poor to give their children what they need, or they are too reckless—spending in drink or other forms of indulgence what ought to go to the support of the family—or they are vicious and give their children a shocking premature training in vicious habits.

The most thorough-going remedy for this mournful evil, the most unrestrained response to the cry of the suffering children, is a proposal, which some benevolent persons do not shrink from advocating, that the state should accept into its charge from the moment of birth, every child that parents are willing to surrender, and take by force from the parents every child to which they are not doing the minimum of justice. If the magnitude of this remedy takes one's breath away, it must be admitted that it has great attractions and that strong arguments might be adduced in its favor. But the proposal is not yet urged upon the public by any person of weight or by any

large number of persons; and those who are in favor of the scheme would probably expect it to be reached by degrees.

A long way short of this, there is a proposal which appears on advanced programmes of social reform, that a free dinner should be given at the public expense to every child at school who will accept it. It may reasonably be asked why this gift should be granted rather than other gifts which the interest of society seems equally to ask for. Economically the provision of a free dinner is a grant of—say 6d. a head per week—to all parents of school children who like to take it. But why should such assistance be restricted to a midday meal, and to children at school? It is very important that infant children should be well fed from their birth; and abundant food, supplied to mothers for a certain period, would be pronounced to be essential for the rearing of healthy children. Then more injury is often caused by inadequate clothing than by want of food: why should not children be kept well supplied with warm clothing and sound boots? It is argued that a dinner may be regarded as indispensable to education; and that, as the state supplies education and compels children of a certain age to take it, it is reasonable that food, without which they cannot learn properly, should be supplied with the teaching. At any rate this is the most obvious and easy beginning of grants-in-aid to parents of families.

But it is a grave question, to what extent it is for the public good that parents should be relieved by the state of the burden of maintaining their children. It is from this general point of view that the proposal to offer at least one meal a day to every child attending school should be considered.

In the meantime there is a plan at work already in England for accomplishing a part of what is aimed at by that scheme. Philanthropy is giving occasional dinners on a considerable scale to selected children, is glorying in its work, and is asking aid to extend its work. Is this a judicious form of relief, and one which ought to be extended? I am afraid there are irresistible reasons for answering no to this question.

The children that receive the charitable dinners are selected. That is an essential feature of the plan. How are they selected?

When the kind-hearted lady to whom the organization of dinners for board-school children in London is chiefly due, began to consult teachers, the mistress of a large school im-

mediately asked whether the children of drinking parents were to be recommended for tickets. "Certainly," said the lady, "they are the most to be pitied." And so they undoubtedly are—the most ill-fed and ill-clad children in our schools; for the poorest are sure to be the children of the worst parents. But by the time the scheme was ready to put before the public, it had been seen that there are grave objections to a plan for feeding the children of bad parents, and it was decided that only the children of "respectable" parents should have the dinner tickets given them. A scheme founded on the fact that there are many school children needing good food began by disfranchising the great majority of them. With a view to the proper selection, the characters of the parents have to be ascertained. The teachers have some means of knowing about the parents, but their knowledge is not complete, and the parents are visited by members of the dinner-organization. This sort of investigation by a visitor is always a painful process, very apt to be inadequately performed. More or less thoroughly, the parents who are at the same time respectable and are not able to give the necessary food to their children are sifted out, at the peril of reducing the numbers too much. The distribution of tickets to hungry children is made in the school, and those who evidently want the food most, if they are not bluntly told, are inevitably made to understand that they are refused because their parents are unworthy.

This seems to me, I confess, a most unfortunate feature of the scheme. I cannot imagine that teachers and visitors can bring themselves to be rigid in their exclusions. But the theory is that the help is given only to parents whom, upon the commonly received principles, it is judicious to relieve. The system is thus brought under the head of charitable relief in general. Our sympathy is invited for widows with children to maintain, for families stricken by illness or misfortune. And we are thus led to ask, whether the dinner-giving is a good piece of machinery for helping such persons? It has a plausible appearance, but it is a cumbrous one, working ineffectively, and giving much needless pain. The best way of relieving the poor is through those who have the best and most natural knowledge of them, and the mode of giving should be as respectful and trustful as possible, and the amount large enough to be of some real use. How is a

widow, struggling to maintain a couple of children, to be most satisfactorily helped? I do not say that she will not be glad that her children should now and then have a better dinner than she can afford given to them; but it will be more acceptable that she should have a weekly allowance which she can depend upon, and that she, the mother, should apply the money according to her own judgment for the benefit of her children.

It is a matter of supreme importance for our social well-being that the family relations should be maintained in health and strength; that parents should be encouraged and pressed to care properly for their children, and children in their turn to care properly for their parents. This object is so paramount, that neither the state nor philanthropy ought to be easily persuaded, in pursuit of other desirable ends, to work against it. In the class of the very poor, there are special difficulties in fulfilling family duties. Sound policy would say, not "Let there be no demand of the fulfillment of family duties among the poor"; but "Let us be especially careful to avoid acts which may tempt the poor to disown them." To assume that young children are to be taken off their parents' hands by the state or philanthropy is a principle likely to do great harm. It will tempt parents to be neglectful of their children, and the class of young children will themselves on the whole be injured by it. If it were carried out, indeed, to the extreme length, so that the state should take charge, in a kindly spirit, of all children who are in danger of not being happily brought up by their parents, we might be almost fascinated by such a policy; but until we adopt that, all experience concurs with sound theory in urging that parents should be held, to the utmost possible degree, responsible for their children.

What then is to be done when parents spend their money in drink, and leave their children only half fed? This is a most painful question, and no answer that can be given to it will satisfy us. You will not mend things by giving food occasionally to the children, because that will be direct encouragement to the recklessness of the parents. Something may be done in extreme cases in the way of deterring the parents by punishment. But we may find most comfort, perhaps, in knowing that the number of such unnatural parents is not large, and is steadily diminishing. When, however, parents

are anxious to do their duty toward the children, but are prevented by extreme poverty from getting for them the food they require, I plead that it is a better plan to give relief trustfully and privately to a parent—better for the strengthening of the family system among us, more considerate toward the parent, more effectual in the long run for the children—than to distribute dinner tickets to selected children in schools.

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CITY SCHOOL SUPERVISION.—IV.

The position of superintendent of a city school system is one of the most attractive in the entire range of professional work. Is he anxious to do good in the world? The clergyman has less power and opportunity. Does he enjoy the study of profound problems of life, society, and the state? The themes before him are alluring and various. The physician studies the problems of a physical life, the lawyer studies the action of men, the superintendent deals with mind as well as body and stretches out his hand upon human action at its source. No man's influence reaches wider or deeper. The misfortune of it is that he sometimes has responsibility without power.

The Superintendent and the School Committee.—The superintendent is an employee of the school committee, and hence in some sense their servant; but he is employed as an expert just as a physician is, and in the range of work in which he is so employed he is independent of dictation. As an agent of the school committee he does many things merely as an executive officer, and as to these things he is a man under authority. As an expert, employed because he knows better than others about school management and methods, and especially in the instruction of the teachers in the principles and methods of teaching and of discipline, he is above the control of his employers as fully as a physician is in the treatment of an invalid. While this principle is clear, just what it includes requires consideration.

It appears to me that the course of study, except so far as it is fixed by the text-books adopted, falls to the untrammeled control of the superintendent, and so do the examination and

promotion of pupils. In short, the intellectual and moral activities of the schoolroom should be guided by him. In this he has no master.

Shall he select the teachers and the text-books? Yes, if the committee so request. The right and responsibility of selecting teachers and text-books belong originally to the school committee, and fall to the superintendent only as a delegated power. There is nothing in either duty that in ordinary circumstances requires more than good sense and right purpose, and these are supposed to characterize all members of school committees.

In a discussion of this kind there is less need of regarding the size of the school system than would at first appear. There is no ratio between the size of a school system and the difficulty of supervising it; and there is no definite correspondence between the size of the system and the size of the man in charge of it. The adaptation of work and adjustment of plan that are required by a change in the size of the system are easily made.

The superintendent may without loss work though principals exclusively in the mechanical portion of his supervision, in statistics, reports, communications on business, programmes, recesses, statements of the course of study, etc., but when he wishes to touch vital questions of pure pedagogy, he must meet the teachers directly in the teachers' meeting or in the schoolroom.

The Superintendent and his Teachers.—There are six ways in which the superintendent becomes the professional leader of his teachers: (1) by his visits to the schoolrooms and suggestions there, (2) by his talks with teachers at his office, (3) by the examinations that he gives, (4) by the grade meetings, (5) by pedagogic classes, (6) by addresses. I do not include "reports" in this list, because a report is addressed to the school committee and beyond them to the general public. A report is no place for a pedagogical disquisition, unintelligible or uninteresting to the public.

1. A superintendent who has settled down into established habits makes two classes of visits as to length and purpose—short and long visits. Short visits are those about five minutes in length. Long visits are twenty-five to sixty minutes long. It is usually a waste of time for a superintendent to stay ten minutes in a room. He had better go sooner or stay longer.

The short call gives an impression of the order of the school, the industry of the pupils, the neatness of the work, the ventilation, the attendance, and often of the relations existing between teacher and pupils.

The longer visit will determine the teacher's skill in questioning, her plan of work, her ability to think the child's thoughts and suit her instruction to his needs. From such a visit the progress of the class can be seen as well as the judgment of the teacher in assigning lessons. Such a visit will sometimes disclose skillful teaching, but small advancement. If the class has been some considerable time in the charge of the present teacher this will be presumptive evidence of capacity on the part of the teacher, but unsteadiness either of method or effort. A superintendent should never criticise a teacher except when he can give helpful advice. To tell a teacher who is doing her best, that her work is not satisfactory is cruel, unless it be done in connection with dismissal. When a teacher needs the spur of watching, a ready, serviceable and unexceptional method is for the superintendent to take charge of the class for a recitation, and at the close speak to the class in terms of such commendation as can be honestly done, and say, "In about three weeks I will hear you again upon this topic."

2. A superintendent should, if practicable, have two office hours daily, one for the general public, including parents and pupils, and one for his associates, including the committee and the teachers. To him will come at this time the teacher who wishes advice as to the arrangement of his school, whether to promote certain pupils, what to do with certain pupils irregular in attendance, indifferent in work, or disorderly in conduct. Such teachers should feel that they have been cordially received and been intelligently and sympathetically helped.

3. A superintendent influences his teachers much by the examinations that he prepares. Influence here is hazardous. It may be stimulating and directive; it may be narrowing and depressing.

4. Grade meetings are a very effective means of stimulating teachers and of unifying the work. Grade meetings should be filled by the thought and work of the teachers themselves rather than by the talk or illustrations of the superintendent; unless, indeed, he wishes to present a subject or a method so wholly new that fair work therein is done nowhere

in the system. Every school system contains a percentage of especially capable teachers, teachers that read and think, con present principles and exemplify methods. A superintendent who feels or who acts as though he felt that he alone can present thoughts worth listening to, is depriving his teachers of the inspiration in the preparation of good talks to fellow-teachers, and the body of teachers of the help from the direct, well-digested, and locally applicable work and advice of their fellow-teachers. The feeling with all should be, We are studying this subject together; let us see what we can make of it. A special duty of a superintendent is to "make the good contagious." Any part of school work may be improved by the simple process of fixing attention upon it.

5. There are two classes of teachers in every considerable school system with whom the superintendent needs special acquaintance. There are the young teachers full of zeal and ambition, somewhat blundering, possibly, but interesting and interested. There is no better way to become acquainted with these teachers, learn their mental make-up, and become their guide, than by gathering them into a class for the study of some professional book. The subjects can be discussed theoretically, as the book treats them, and practically, as found in daily experience. After the class exercise, conversations on the practical problems of the schoolroom may be of great service. And then there are the principals and the more experienced and capable teachers—teachers liable through the general recognition of their ability and success to settle into a contentment which brings their usefulness down to the level of mediocrity. There is often great waste of power here. These also the superintendent should gather into a class, for their sakes, the sake of the schools and himself. Into this class should be brought all the new books on pedagogy for examination and review. Here all questions pedagogic should be discussed until each has yielded its secret or been proved unyielding. Here find solid foundations; "prove all things and hold fast that which is good." Here the superintendent will get many suggestions concerning the philosophy of school work. For food for his own professional life he will repair to the schoolrooms, to this class of his ablest teachers, and to private reading.

6. The superintendent should regularly address all his teachers in a single body upon some fresh and important ed-

ucational theme. This meeting of all the teachers is essential to the feeling of unity among the teachers. The high school is not an institution apart. Primary and grammar teachers are not Jews and Samaritans. On such occasions the tendencies of the system should be pointed out and corrections applied. Such meetings are inspiring—at least to the superintendent. No man has a more responsive or a more critical audience than greets a superintendent at these general meetings.

Finally, a superintendent must not work too much in details. It is possible for him to examine classes, make questions, mark examination papers, compile statistics, prepare for teachers' meetings, visit schoolrooms, attend to all the vexing questions of discipline that arise, until he is so worn with multifarious labors that he has little time or disposition to read or think. He loses his power of meeting men and dealing with complicated problems. The impression that he makes upon his committee and the public is that of narrow limitations rather than masterful resourcefulness. He gives no inspiration to his teachers. He has no originating power. It is death to the schools to have a tired out superintendent.

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THE VALUE OF PRACTICE TEACHING.—IV.

A school for practice is an essential part of an institution for the training of teachers. Teaching is both a science and an art. The science may be learned in any institution, but the art can only be acquired by practice, in the same manner in which all other arts are acquired. A man who is familiar with legal principles, may be ignorant or bungling in the practice of the law; a man who understands the science of mechanics, may be unable to make a machine. In every department of human activity, including teaching, the principles underlying the effort should be known, but the successful application of the principles can be attained only by the skill that is gained through practice. There are also many things that cannot be discovered or known without coming in contact with children. Their relations to each other in the schoolroom and on the playground are a revelation to many,

indeed to most, teachers. Consequently, in order to secure that kind of ability which is necessary for success in teaching, an opportunity must be afforded for meeting and mingling with children in their sports and in their classes, not as an observer, but as a teacher.

Again, almost all Normal schools give to their graduates a license to teach. This license specifies that the holders of it have the scholarship, mental ability, moral character, knowledge of methods, and tact in managing, that are essential to success. A statement of that kind, given to a person before he has had an opportunity to display his powers as a manager of children, or as an instructor of youth, is on its face a falsehood. Very few people are able to judge of the fitness of a person to engage in the work of teaching by looking at him. It requires intimate knowledge of his views of life and of his acquaintance of human nature, of his character as a man, of his skill as an instructor and of his tact as a disciplinarian, to enable the persons who certify to his ability to make a statement that is worthy of acceptance or credence. Such a statement cannot be made by anyone intelligently or honestly, until he has seen the teacher at his work and studied his peculiarities of thought and of method.

It need not be thought that a school for practice is a place where young teachers are simply criticised for their faults; in fact, a school conducted in such a manner is a misrepresentation of a proper school of practice. It is rather a place where whatever is excellent in their character or their modes of management and methods of teaching, is commended, and where they are encouraged to strengthen themselves in every proper way for doing the best work that they can do. The first act of a teacher who supervises the novices in their practice, should be an act of commendation, if it be possible. The beginner is to be encouraged both by illustration from model lessons and by gentle and wise counsel from his teachers, to supplement his deficiencies and overcome his defects. In this way only can the best possible results be secured. The student teacher is not restrained in any wise in the manifestation of proper individuality, but he is not permitted to experiment upon his pupils for the purpose of disclosing some new and original methods of presenting subjects, unless the teaching is in accordance with the known and acknowledged principles of the science of education. Neither is he restrained from doing

something new, simply because it is his own. A school of practice becomes thus a place where teachers are trained for their work. When they have completed a course in such a school, they go into the public schools with some definite knowledge of how they are to proceed; they have methods of teaching, modes of administering and managing schools, they have principles on which to base their future work, and best of all, they know their own weakness and strength as viewed by persons who have their interests at heart.

If the Normal schools of the country have any right to existence, it must be because they are successful in preparing teachers for their work; and right or wrong, the average man regards the ability to control and manage pupils as a chief element in success. If we are ever able to state that a teacher is successful, it must be from seeing him actually doing the work of teaching. The value of a teacher's work should be estimated from the use he makes of principles which he should employ, and his skill in controlling and directing pupils; consequently, no one should certify to excellence in these respects unless he has himself seen the teacher at his work. In view of these facts, it becomes evident that a school of practice, which also affords an opportunity for the pupil-teachers to witness the best kinds of teaching, is an absolute necessity, if a certificate is given vouching for the proficiency and efficiency of the person holding it.

Viewed from any standpoint whatever, from that of benefit to the pupil-teacher, or of benefit to the pupils taught, a school of practice is an excellent institution. It is more, it is a necessary part of every school in which the training of teachers is sought. I cannot understand how it is possible for Normal schools to exist and receive popular commendation without this adjunct, which shall be in itself a model for the students as to discipline and instruction, as well as a school for training and testing the teachers for their responsible duties.

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VII.

EDUCATION IN FOREIGN PERIODICALS.

School Savings Banks in England.

[The following interesting circular has been issued by the Education Department, under date of October 12, 1891, addressed to the teachers and managers of every elementary school in England and Wales that receives government aid.—ED. EDUCATIONAL REVIEW.]

"The enactment during the last Parliamentary session of a measure, by which the parents of children attending Public Elementary Schools have been largely relieved from the payment of school fees, furnishes a suitable opportunity for inviting the renewed attention of School Managers and Teachers to the importance of thrift, and to the exceptional facilities possessed by Elementary Schools for the encouragement of this practice in early life.

"In a Circular issued from this Department in July, 1881, my Lords took occasion to urge the consideration of this subject upon all concerned in the management of Elementary Schools; and this appeal met with a ready response in many parts of the country. During the ten years which have since elapsed, the number of Banks in connection with Elementary Schools under inspection has greatly increased. There were in 1880, 1,087 such Banks, and in 1890 the number had risen to 2,498. Much, however, yet remains to be done in this direction, and the practical abolition of School Fees has rendered it easier for School Managers and Teachers to enlist the co-operation of parents, and to bring under their special notice the existence of the School Bank and the use which might now be made of it.

"The general principles which should be kept in view in relation to this and kindred means of extending the usefulness of our Public Elementary Schools have been repeatedly brought under the notice of Managers. In the 'Instruction to Inspectors'—a copy of which is required by Art. 8 of the Code to be kept in every School—it is pointed out (par. 53) that a good School under favorable conditions does not limit its work to the scheme of instruction prescribed in the Code, or to prepara-

tion for examinations; but seeks by many subsidiary expedients to render service to the children, and to exert a right influence on their characters and their aims in life. Among these expedients, the provision of a School Savings Bank is specially enumerated. My Lords consider the present an opportune moment for repeating this suggestion, and for pointing out briefly the reasons which justify it.

"Experience has shown that many of the evils which weigh most seriously on the industrial classes in this country, are the results of improvidence and waste. But some of these evils admit, at least, of partial remedy. To learn how to economise slender resources, how to resist temptation to needless expense, and how to make reasonable provision for future contingencies, is an important part of education. Such knowledge is calculated to protect its possessor from much trouble and humiliation, and to help him greatly in leading an honorable and independent life.

"In mature years, it is often found difficult to acquire this knowledge, and still more difficult to apply it in practice. But in a school much may be done to render its acquisition easy to children, and to show to them the advantages of economy and foresight. Simple lessons on money, on the conditions which affect the rate of wages, on the relations of skill, prudence, and knowledge to industrial success, and on the right ways of spending and saving, may be made very intelligible and interesting to the young. Economy, however, is a habit; and is to be learned, as other habits are learned, rather by practicing it than by listening to demonstrations of its importance. During the school life of a child there arise many temptations to the heedless and wasteful expenditure of small sums; and many occasions on which, if the opportunity were offered, such sums might be usefully and wisely saved. The child who is helped to deny himself some trifling present gratification, who is encouraged to save by degrees a few shillings, and who finds this sum available for the purchase of books or clothes, for helping his parents at a time of family misfortune, or ultimately for his own equipment on leaving school for work, has received a practical lesson in forethought and self-restraint which will probably abide with him for life.

"The value of such a lesson is not to be measured solely by its effect on the scholar's own character and welfare. It exercises a reflex influence on the whole household to which he

belongs. And when a parent resolves to set apart even a portion of the pence saved under the Education Act of 1891, and to deposit it regularly in the scholar's bank, the educating work of the school is extended to the home, the interest of other members of the family is excited, small economies become easier, and the savings bank, which at first receives only a few trifling sums, becomes recognised as a household institution, to be maintained long after the school life of the youngest child is ended. The possession of even a small reserve, or capital, places it in the power of the workman gradually to acquire the ownership of his house or a piece of land, to take a share in an industrial partnership, or to enter on a small business, which, although at the outset it may only employ himself and his family, may, by his economy, industry, and skill, become the means of employment to many others, and so contribute to the general prosperity. Thrift and temperance are very nearly allied: each is helpful to the other, and having regard to the enormous waste caused by intemperance, there can be little doubt that if the people of these islands were more temperate and thrifty, our home trade and the profitable employment of our people therein would be very greatly increased.

"The well-known thrift of the peasantry and artizans of France has had a remarkable influence in adding to their comfort and sense of independence, in developing the commerce and manufactures of that country, and in enabling her people, a few years ago, to recover with extraordinary rapidity from the effect of a great national calamity. It cannot be doubted that the institution of the school savings bank—*caisse d'épargne scolaire*, has contributed largely to this result. From a memorandum recently presented to Parliament and prepared by an officer of this Department (Report of the Committee of Council on Education, 1890–91, p. 276), it appears that no fewer than 478,173 scholars in the French elementary schools have little banking accounts of their own, and that the total sum standing to their credit is 12,683,312 francs, or more than half a million sterling.

"In Belgium, a country with 6,030,043 inhabitants, the School Savings Bank is also a very popular institution, and is largely used by parents in making their earlier and humbler efforts in economy, before they are able to open accounts in their own names. The last official returns for that country

show that out of a total number of 622,929 scholars in the primary schools, 171,589 have banking accounts, and the sum standing to their credit amounts to 2,930,359 francs, or 117,214*l*, the average deposit rather exceeding 16 francs per head. Even this result is described in the official reports as less satisfactory than in some former years, and has been attained during the months of an exceptional crisis seriously affecting the industry and agriculture of the country.

"No such extensive use has yet been made of the school bank system in our own country. But in certain places, and wherever the experiment has been tried in a judicious, business-like, and kindly spirit, it has proved remarkably successful. For example, in the single city of Liverpool, 68 School Banks have been established in connexion with the Liverpool Penny Savings Bank Association. Year by year the number of deposits increases, and in 1890 the number of separate children's accounts had risen to 25,114, and the sum deposited to 10,518*l*. Each quarter any child having ten shillings or more in the School Penny Bank, has that sum or the multiple of it transferred in his or her own name to the Liverpool Savings Bank, certified under the Act of 1863. This practice lightens the responsibility of the school authorities, and introduces the depositors to a savings bank which they may continue to use after leaving school. The sum of 2,523*l*. was so transferred in 1890.

"These results have been achieved without the pressure of any authority, but mainly by the voluntary exertions of the friends and Managers of schools, and by the intelligent co-operation of the Teachers. The advantages of thrift have first been simply explained to the children, and then opportunities for its exercise have been placed within easy reach. In some schools, in which it has been the practice to give small money premiums for special proficiency, industry, or good conduct, the prize has taken the form of a deposit in the Savings Bank in the scholar's name, so that, on leaving school, he has been presented with a Bank book, and a substantial nucleus for future saving. In Art. 102 of the Code there is a special provision for the payment of certain sums to the Managers of a school in respect of each Pupil-teacher who, at the annual examination, passes fairly or well. The sums thus granted on behalf of the Pupil-teacher may often with great advantage be placed in the Savings Bank, and reserved until the completion of his

apprenticeship, to meet the expenses necessarily attendant on his admission into a Training College.

"My Lords are aware that Penny Banks and Provident Clubs of various kinds have already been founded, in many schools aided by the Parliamentary Grant. In Glasgow, Manchester, Hull, and other large towns, as well as in Liverpool, the Trustees of Savings Banks certified under the Act of 1863 have been actively instrumental in their formation. My Lords have no wish to interfere with any existing plans which are found to work well. Every expedient which encourages economy and forethought has its educational value. But shoe clubs, clothing clubs, and other temporary devices which merely aim at supplying a particular want, have the disadvantage that they do not last after that want is once satisfied, and are of little service in the formation of a permanent habit. What is to be desired is that the scholars should become early familiar with the practice of saving in view of *any* possible future need. My Lords desire, therefore, to remind School Managers and Teachers of the special facilities offered by the Post Office for the establishment of Penny Banks in schools. Such banks, when formed, may readily be placed in connexion with the local Post Office Savings Bank. Small books for the use of the children have been prepared, and are issued gratuitously by the Savings Bank Department, and the necessary rules, which are few and simple, will be found printed in each of these books. Suitable ledgers for keeping the accounts of the School Bank in a simple form can also be obtained at a small price. Deposits of small sums should be entered in the scholar's book and in the school ledger, and as soon as the sum paid by any depositor reaches a sufficient amount, he should be assisted to open a separate account in his own name in the Post Office Savings Bank, and he will thus be able, if he wish it, to make his subsequent payments direct to the Post Office. Although the lower limit of deposits in the Post Office Savings Bank is fixed at one shilling, facilities are afforded for saving penny by penny by means of postage stamp slips. This simple plan has proved very serviceable, as a means of interesting children, and helping their earliest efforts to save. The forms specially issued for this purpose are readily procurable, and will be found to contain full directions as to their proper use.

"My Lords, while fully appreciating the services which the

Teachers of schools may render in the promotion of economy, are unwilling to cast upon them any additional labour and responsibility which might interfere with the proper discharge of their daily duties. They believe, however, that they may rely with some confidence on the good will of School Managers for help in devising and carrying out the needful arrangements. Two or three members of a Local Committee may act as Trustees of the School Bank, and may open an account with the nearest Post Office Savings Bank. On one or two mornings in the week, one of the number should be present to receive deposits, and to conduct the simple business connected with the withdrawal of money or its transfer to the Post Office Bank.

"My Lords believe that the general adoption of such a plan will greatly increase the usefulness of the Elementary Schools as instruments for the formation of character, and will, in present circumstances, not be without a valuable influence in awakening the sympathy and interest of parents. They, therefore, invite to the whole subject the consideration of members of School Committees and Boards, and of those persons of leisure and influence who are interested in Elementary Schools, and in the future well-being of the scholars. The Annual Return (Form 9) required to be filled up by Managers has long contained a question respecting the existence of a Bank in the school, and my Lords have recently introduced into this form two further questions respecting the number of scholar-depositors, and the total amount standing to their credit. They trust that year by year the number of satisfactory replies to these questions will largely increase.

"Since occasions often arise in which Teachers and local Managers are asked for counsel respecting other forms of providence and thrift than those immediately connected with a school, an Appendix is added to this letter, containing some particulars which have been drawn up by the authorities of the Post Office in explanation of the kindred agencies by which the habit of saving may be encouraged in later life. It may also be convenient to the Managers to learn from the enclosed leaflet the steps which those authorities have recently taken to enlist the co-operation of local postmasters, and to afford all needful aid to persons interested in the promotion of economy among the industrial classes."

Manual Training in Relation to Health.

SIR PHILIP MAGNUS IN "HYGIENE."

"Among the many changes that have taken place in the system of national education during the last decade, by no means the least important is the practical recognition of the principle that education is the right development of all, and not of some only, of the faculties of mind and body in preparation for complete living. As regards the mental faculties, we were accustomed, in times not so long ago, to speak of the five senses as the sole agencies through which mind and the external world were brought into close relation. Of these five senses, the eye and the ear were not only the chief but the only sense organs that were utilized, and these only in so far as they served for the exercise of memory. Education consisted mainly of repeating facts acquired at second hand. The senses themselves, as organs of perception, were very little cultivated, and among these the muscular sense was not included. Yet it has now been long known that much of knowledge which we acquire by the direct action of the eye is the result of muscular changes, and that by far the greater part of our knowledge of the external world is due to the action of the limbs, and to the muscular impressions produced upon the brain through the calling into play of the appropriate nerve centers. With all this Physiology has made us fully familiar. But education (which from its theoretic side may be regarded as an applied science) has been slow to recognize the necessity of cultivating the muscular sense as a means of acquiring knowledge. Indeed, the acquisition of knowledge at first hand has been little considered. The revolution that is associated with the New Education is little more than a protest against teaching by authority and the substitution therefor of teaching by observation and experiment; and this new departure implies the training of all the organs which are concerned in giving exact notions of the things about us. This is a great advance on learning by memory only. The new education demands the careful training of all the organs by which knowledge is primarily acquired. It rests, therefore, on a psychological and physiological basis. Manual training is claimed as a subject of school instruction because it serves to exercise conjointly, and in harmony with one another, the muscles and nerve centers of the hand and eye which are concerned in perception.

"This is the intellectual side of the argument for the introduction of manual training into our schools.

"Although of importance in the education of all children, it is of more importance in the training of those who have mainly to employ their hands in the work of life, as helping to create aptitudes and fix sense-impressions in the brain, which will subsequently prove serviceable to them. Regarded from the economic or industrial point of view, much has been said of late in favor of manual training, in connection with the question of technical education. To our young artisans there is little doubt that instruction which serves to exercise the hand and eye, to teach exact notions of form and size, of mass and hardness, and to enable the hand to represent on paper, and to reproduce in material what the eye perceives, is most serviceable; and if at the same time the instruction can create aptitudes for using instruments of precision, and can develop handiness concurrently with the training of the intellect, its educational value must in the course of time be generally recognized.

"It is only five years ago, at the Birmingham meeting of the British Association, that I ventured to put forward these arguments in favor of manual training, and, relying mainly upon my experience of foreign schools, to urge upon the authorities responsible for our education the desirableness of introducing such teaching into our public elementary schools. At that time France, Belgium, and Holland had brought the workshop into the school, and the system of manual instruction known as Slöjd was generally adopted throughout Sweden. As authority for such an innovation in our methods of instruction, it was pointed out that similar teaching had been strongly recommended by many of the most prominent writers on education of all times, and Comenius, Locke, and Rousseau were quoted in support of this new subject of instruction.

"The progress of the movement, in London, during the last few years has been very rapid. Tried experimentally in one or two schools at first, and later on more systematically under the auspices of the School Board and the City Guilds Institute and the Drapers' Company, the subject, which is now formally recognized in the Education Code, is likely before long to be very generally adopted in our schools. Already there are over 700 boys under instruction in connection with the School Board of London. These children vary in age from 11 to 14;

they come from 61 different schools, and receive instruction in 9 centers in the metropolis.

"But at the present we are only at the begining of the movement. New centers of instruction are being rapidly formed, and before Christmas next it is expected that in London alone provision will be made under the London School Board for the manual training, in properly fitted workshops, of nearly 3000 boys.

"In other cities, particularly in Manchester, Liverpool, and Birmingham, equal progress has been made, so that before long we may expect to find the whole of our future artisans undergoing a supplementary training altogether different in kind from that which hitherto has been provided in our elementary schools.

"There is another aspect in which manual training may be considered, which is of equal importance with the intellectual and industrial points of view, and that is in its relation to the health of the children. Experience and theory both show the value of the instruction as a mental exercise and as a serviceable preparation for the actual work of life. But in education the *corpus sanum* has to be considered as well as the *mens sana*, the healthfulness of an occupation as well as its intellectual character and utility. In visiting foreign schools I was struck with the superior physique of the boys engaged in the school workshops over those occupied the whole day in sedentary pursuits, and these observations have left no doubt in my mind that manual training conduces to physical growth and development. But casual observations such as these do not count for much, and the subject is one well deserving further inquiry.

"Some few years ago there was a great outcry that the children in our elementary schools were being overinstructed, and that their minds were being educated at the expense of their bodies. The cry of 'overpressure' was everywhere heard, and many who were silently opposed to all education of the people took advantage of it to proclaim that we were injuring the physical constitution of our future working classes, and were training a body of short-sighted, narrow-chested, muscularly weak artisans, whose smattering of learning would prove no adequate compensation for their deterioration in physique. The outcry did some good, for it drew attention to the condition of elementary education, and accelerated the improve-

ments which have since taken place. Careful investigation showed that children suffered more from *underfeeding* than from *overpressure*, and soup kitchens and penny dinners have since been more liberally provided. But the causes of underfeeding could not, unfortunately, be permanently removed; and, allowing for some exaggeration in the 'overpressure' cry, it was ascertained that the conditions of our primary instruction did tend to encourage undue pressure of both teachers and pupils. The competition for money grants on results was altogether unwholesome and has been gradually discontinued. But apart from that, the education provided in our schools was shown to necessitate too much sitting, too much reading and learning by heart, and to take too little account of the natural and spontaneous activity of the child.

"It failed to develop the child as a whole, in accordance with its physical constitution, and the natural overflow of vital energy was restrained instead of being directed into channels of future usefulness. The remedy for this could not be found in mere physical exercise—in drill, gymnastics, or in ordinary recreation; for these subjects occupied a large amount of time and could not well be made educational in character. The school hours, if devoted exclusively to book-learning and employed in sedentary occupation, were too long, and proved too great a tax upon the child's strength, and the system failed to insure at once healthy development of body and intellectual progress. What was needed was a subject of school instruction, which, through the exercise of the muscles, should stimulate the brain and at the same time secure intellectual discipline. This was found in manual training. Experience shows that where manual training has been introduced into schools, it is helpful in maintaining the body in a healthy condition, while serving at the same time to stimulate the mental powers. Theoretically this is only what one would expect, but experience has verified the expectation. M. Salicis, the founder of the École Tournefort at Paris, to whom the movement in favor of manual training is so largely due, tells us, after an experience of sixteen years of Paris schools: 'The children thrive, notwithstanding that their attendance in school is longer by two hours than the regulations provide.' And the instructions, placed at the head of the programme for manual training now observed in all French schools, fully recognize the advantage of such teaching from a hygienic

point of view. In defining its object we are told: 'Manual training has a double purpose, one of which is to strengthen the body, to invigorate the constitution of the child, to place him in the hygienic conditions most favorable to a general physical development.' From all countries we have testimony of the salutary influence of this training, and our own experience shows that apart altogether from the industrial advantages which children derive from the aptitudes it creates, it quickens their intelligence, and increases their interest in their ordinary lessons, enabling them to fix their attention with less loss of energy upon their other studies.

"There can be no doubt that the concurrent development of all the functions and faculties of the child is an indispensable condition of healthy education. Without some kind of manual training, this cannot be effected. We are told that the brain consists of distinct parts which subserve separate offices, and that certain nerve centers, situated within the brain, regulate and initiate through the will distinct muscular actions. These nerve centers appear to control actions which are more susceptible of educational influences than the reflex actions referable to the spinal cord, and the development of these motor centers, and, consequently, the due development of the brain of which they form a part, depends upon their being called into use and properly exercised.

"It would appear, moreover, that each such center has a definite period of growth during which the exercise of the organ it controls conduces most to its development, and that if this exercise is neglected the nerve action in the brain is enfeebled, and the activity of the organ is impaired. It is important, therefore, that education should seize upon the organ during the period of development of the corresponding nerve center, if the organ is to be trained to most advantage. Experience fully confirms these inferences from experiments, and shows that manual dexterity and nearly all other aptitudes are best acquired during childhood, and that no amount of exercise in after life can compensate for omissions in our early youth. Sir James Crichton Browne, who is, perhaps, an unwilling witness to the advantage of introducing manual training into our elementary schools, tells us: 'The nascent or development period of the hand centers has not yet been accurately measured off; it probably extends from the first year to the end of adolescence, but there can be no doubt that its most active

epoch is from the fourth to the fifteenth year, after which these centers become comparatively fixed or stubborn.' And he goes on to say that boys and girls whose hands have been left altogether untrained up to the fifteenth year are practically incapable of high manual efficiency ever afterward. In this statement we have a powerful argument, from the economic point of view, for making hand and eye teaching concurrent with other instruction throughout the whole period of a child's primary education. But I do not desire now to dwell upon this aspect of the question, but to indicate rather the general effect of such training on a boy's health. On this point the same authority may be again quoted with advantage. He says: 'The boy who is reared with his hands bandaged, physically or morally, or who is by any means withheld from ample exercise and varied discipline of these wonderful and willing organs, must grow up to some extent feeble and incapable;' and he adds, 'Depend upon it, much of the confusion of thought, awkwardness, bashfulness, stutterings, stupidity, and irresolution which we encounter in the world, and even in highly educated men and women, is dependent upon defective or misdirected muscular training, and that the thoughtful and diligent cultivation of this is conducive to breadth of mind as well as to breadth of shoulders.'

"It may be taken then as proved that without exercise that brings into discriminate use the muscles of the hand, the brain itself may be said to be only imperfectly developed, and the general vitality is lowered in the same way as if any other sense is not utilized. But it is owing to the general and uniform muscular development of workshop exercise properly directed, that the health of schoolboys between eleven and fifteen years of age is undoubtedly improved. To the children of all classes such training may be considered, on purely intellectual grounds, a necessary part of school education, and it is satisfactory to know that workshops have been recently attached to very many public and endowed schools. But to the children who frequent our national schools, and who form the bone and sinew of our population, such training is still more important, not only intellectually, industrially, and morally, but also with regard to their muscular development. The conditions under which they live give fewer opportunities for healthful physical exercise than are enjoyed by children who are placed in more favorable circumstances; and the fact that the majority of

these children will be occupied with manual work during the greater part of their lives is an additional argument for utilizing a portion of their school days in the training of those organs on the usefulness of which their future progress so greatly depends.

"It is a fact of some importance that the introduction of workshop instruction into schools has the effect of lessening the necessity for punishment. I think we may assume that any education in which punishment is frequent is an unhealthy education. The effect of punishment is to depress the nervous system and to diminish the intellectual energy needed for school work. Even where under the influence of fear some better results are temporarily obtained, the general vitality of the child is lowered by punishment, and the educational results are less satisfactory than they might have been. The progress of educational science is shown nowhere to greater advantage than in the decrease of punishment as a means of school discipline, and the effect of these improved methods on the health of children generally, and particularly of children of nervous temperament, cannot be overestimated.

"Now manual training is a school exercise which is not only interesting in itself, but quickens a child's interest in many of his other lessons, and the desire to take part in the workshop instruction is a wholesome inducement to attention and to general good behavior. In the course of time there is no doubt that by adequately exercising, without subjecting to any painful strain, the various intellectual organs, all school lessons will be made sufficiently interesting to render punishment quite unnecessary. The addition of manual training to the curriculum of schools marks a very important step in this direction.

"In order that workshop instruction may yield its maximum hygienic value, it must be given under conditions favorable to health. First of all the school workshop must be constructed on approved sanitary principles. Hitherto we have been content to take any spare room, fit it with benches, and use it as a school workshop. But with the general adoption of manual training, the construction of the school workshop has to be carefully considered, both as regards its size and shape, and the best means of lighting and ventilating it. Then as to fittings, we have to determine the proper height and arrangement of benches, the best kind of tool racks, etc. The mode

of handling tools, and the position to be occupied by boys at work so as to prevent injurious muscular development, are also matters of importance in their bearing upon the health of the children. On these and on many other points the teachers will require to be informed, if manual training is to be a really healthy exercise and is to occupy a prominent position in the school curriculum.

"To some of these questions experience has already provided answers; others still await solution. A top-lighted shop, for instance, is not considered as good as one lighted from the sides. As regards the character of the instruction, lathe exercise is not considered as good as bench work. Most of the French schools are provided with lathes, and the boys work in groups of three to each lathe; but on this point M. Sluys, the Director of the Normal School at Brussels, well says: 'The turner's work is always difficult and not without danger; besides, it calls for a one-sided effort. We cannot, therefore, give it a prominent place in school work. In a word, woodwork without carving or turning is sufficient to attain the end, and ought.' This view has guided those who have had the direction of manual training in this country, and is in accord with the opinions expressed by other educationalists. Rousseau says: 'The trade I should prefer my child to choose would be that of a joiner' (and by trade Rousseau only means 'manual exercise'); 'it is neat, it is useful, it can be practiced in the home, it keeps the body in tolerably good condition.' The lessons given to teachers at the City and Guild Central Institution have been restricted to bench work, and in the syllabus of examination for teachers' certificates recently issued by the City Guilds' Institute, 'woodwork without turning' forms the main part of the examination.

"I need scarcely say that not only the intellectual but also the health value of the instruction depends very much upon the intelligence and training of the teachers; and on this point I may be pardoned expressing some satisfaction that most authorities seem now to concur in the opinion I have elsewhere stated, that the 'teachers should be trained schoolmasters.' 'It is among the primary instructors,' says M. Sluys, 'that the recruiting of teachers for this work is to be done,' and further—'the experiments of Basedow, Francke, and others in regard to mutual training—the educational bearing of which these teachers well understood—have failed,

chiefly because the instruction in this work was intrusted to *artisans*, who considered the school a *workshop*, and treated the pupils as *apprentices*.'

"It will be seen that there are several important questions connected with the hygienic value of manual training as a school exercise on which it is desirable to collect more exact information than we yet possess.

"Information as to the results of manual training under various conditions will serve as a guide in framing rules for such instruction with a stricter regard to its healthfulness than has yet been done. It is very desirable that accurate measurements should be made of the children under instruction, so as to ascertain its effect in increasing muscular development. Records should be kept of the absences of children through illness, of their progress in other studies; and the results of these observations should be considered in connection with the system of instruction adopted. In this way further guidance in directing the teaching on the best lines might be obtained. It must be remembered that manual training is yet, and is likely to remain for many years, a new subject. Its introduction into our schools marks an important change in our system of education. But it is still in its experimental stage. One of its chief advantages is to correct and mitigate the harmful results of that combination of circumstances peculiar to the conditions under which the poorer classes have hitherto been educated, and known as 'overpressure.' 'In ordinary lessons,' says M. Sluys, 'pupils remain at their desks many hours. This sitting position is bad; it enfeebles the body and in this way reacts upon the mind. Gymnastic exercise has its *raison d'être* in the need of preserving the organic equilibrium. It increases the functional energy, and through this the moral. Manual exercises, if they are properly chosen, produce similar effects.' That manual training may be made the means of developing muscular strength and of preserving and improving the health of the children in our elementary schools, there can no longer be any reasonable doubt; but it is important, both for the intellectual as well as the hygienic value of the instruction, that the best methods of training should be adopted, and such methods can only be secured by accurate observations and careful deductions."

VII.

REVIEWS.

English Composition.—By BARRETT WENDELL, Assistant Professor of English at Harvard College. New York: Charles Scribner's Sons, 1891, pp. 316.

The principal criticism to be made upon Mr. Wendell's book is the one made some years ago by Mr. Churton Collins in his brilliant review of "From Shakspere to Pope"—that it is undesirable to reprint lectures as essays. Mr. Wendell's eight chapters are eight lectures, so slightly adjusted to reading purposes that at one point he even refers to "our subject this evening"; and they have the reiterance and copiousness appropriate to an address, but less necessary and agreeable when put before readers. However, if the author had not time or inclination to reduce his work to closer expression, he did well to publish it in its present form. Though it is by no means available as a text-book on English composition, it will be useful to many general readers—and it is to "popular reading" that the introductory note devotes it.

It does not burden the memory with many rules, nor does it consider minor arts and details of style. A few large principles are presented: the authority of good use in individual words, and in their arrangement in sentences; the importance of unity in sentences, paragraphs, and whole compositions; the attention due to emphasis, which requires a studious placing of the chief parts of sentence, paragraph, and whole composition in the most striking positions; the principle of coherence—that is, an unmistakable relation of each element to its neighbors; distinctness of statement; tact in securing suggestiveness of effect; adaptation of manner to the thought and feeling it expresses—these are the leading topics. There are only a few of them, and they are all simple; but anyone who accurately and consistently applies them to his work is certainly a good writer.

The sound sense which Mr. Wendell constantly shows is illustrated in his hearty appreciation of the fact that good thinking makes good writing, and that the writer's best study of manner involves a close study of his ideas. The effect

which he desires to produce—the more intelligently and minutely he realizes that, the better prepared he will be for choosing one out of his many possible forms of expression.

A general introductory statement, with some necessary definitions, explains that authors cannot be mere theorists in their style; theory is often resisted by conventional authority. Correct style is "the result of a constant conflict between good use and the principles of composition." For convenience a few arbitrary terms are employed, one of which, "Mass," to indicate the striking placing of important elements, seems less happy than the others. The terms Denotation and Connotation are transformed from logical to rhetorical nomenclature; "a word may be said to denote the idea it identifies—to connote the thoughts and emotions it arouses." Rational ground is taken about the use of words; long or short, few or many, Saxon or Latin, general or specific, the choice must be determined by the writer's immediate purpose, not by some theory. The associated ideas carried with many words must also be studied, for the sake of avoiding undesirable results and securing the fullest effect. As a general principle, short and periodic sentences are preferred. In sentence-structure, the conflict between "Mass" and the naturally inflexible order of words causes the writer one of his chief difficulties. Care in the use of connections is of the first importance; they should dovetail instead of merely gluing style.

After a discussion of paragraphs and composition wholes, we come to lectures on clearness, force, and elegance—the intellectual, emotional, and æsthetic elements of style. The secret of the first lies in accurate denotation, of the second in connoting our emotions. In both, sharp insight into what we wish to say, and a knowledge of those whom we address, are essential. An important method of force is the use of figures; these should be "broadly, sympathetically human"; not ordinarily appealing to an imaginative capacity for imaging unusual illustrations, but so familiar that people in general will readily understand them; like Dr. Holmes's metaphor for Boston State House, "the hub of the solar system," or Doutis', when the spirits peered at him, "as of an evening one peers at another beneath the new moon, and knit their brows as an old tailor does at the eye of a needle." Gains in force, too, may be made by what seems to the writer a deliberate weakening. "The terrible sanity of the average man is always watching

you." Ultimate power must be kept in reserve, so that nobody can know "how much further you might easily have gone, had you chosen. The tact with which style may be kept strong enough to connote no weakness, and weak enough to connote indefinite strength, is perhaps the finest trick of the author's trade."

Style must be constantly varied according to the thought and emotion. Elegance lies in adaptation; as the word suggests, choosing from the many possible expressions the one which best will serve our purpose. This principle keeps prose from poaching in the vocabulary of poetry, and poetry from becoming prosy. It teaches to choose lofty, ordinary, or even vulgar language, according to topic, audience, and motive. We cannot, from the mere standpoint of elegance, condemn any word or composition until we are sure that we understand a writer's purpose. For elegance, too, an author should produce an impression of "the ease of habitual mastery." Here, as also for force and clearness, steady daily practice is almost indispensable. So, too, is training in artistic perception, through the masterpieces of literature, and especially through poetry, the finest form of literary art. The effort to express one's self in verse may often be helpful, aside from any question of the verses' actual value, in bringing nearer to one the charm of poetry, if not its secret. A mastery of what poetry means does more than any other work can do in helping the student to a mastery of good writing.

The attention of young writers cannot be called to this last point too earnestly, as it seems to me; and the same value attaches to the emphasis laid on a clear understanding of what one is trying to say, and to the proposition that the secret of fine rhetorical art is fine good sense; though, perhaps we might be more exact if we should say refined good sense.

One peculiarity of Mr. Wendell's manner will be disagreeable to many, and some of his remarks on general literature may seem questionable. But as this partial summary shows, he has developed a simple and rational outline view of English composition. Moreover, he has presented it in a lively way.

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Lessons in Astronomy, including Uranography.—A brief Introductory Course without Mathematics for Use in Schools and Seminaries.—By CHARLES A. YOUNG, Ph. D., LL. D., Professor of Astronomy in the College of New Jersey. Boston and London: Ginn & Co., 1891, pp. ix, 357.

Dr. Young of Princeton College, in his *Lessons on Astronomy*, offers to teachers and pupils an excellent non-technical survey of the science of astronomy. He has, as a prime qualification, thorough mastery of the subject; he is an astronomer as well as a professor of astronomy. The present text-book shows that he knows how to select properly, to simplify satisfactorily, to abridge without losing essential points, and to condense without becoming obscure.

The plan of the work is excellent. The "Geography of the Heavens" was a fascinating study forty years ago and may be studied still in some schools. It is of basic value to one who would read at all about astronomic phenomena. New comets, strange stellar discoveries, planetary positions are determined, even as announced in newspaper paragraphs, by their positions among the constellations. Dr. Young, in Uranography, the true title replacing the misnomer, gives a succinct account of the principal constellations as a proper matrix for the facts of the science. It might perhaps be desired, that the notion of lines of reference, arbitrarily fixed to determine position, were more clearly brought out; and the value of the two systems in use given.

The book is intended for those who have studied only elementary mathematics, and despite the use of spherical coördinates in geography, many pupils find them very obscure. Even so slight a slip as the use of the term "almucantar" in the diagram (Fig. 2, page 7) instead of "parallel of altitude" as in the definition, is unfortunate. The diagrams, however, are very clear, and no pupil of a good teacher need leave the subject without well defined notions of altitude and azimuth, right ascension and declination. There are, here and there, in the text, statements of unaccepted theories. Unless they have unfortunately found place in popular belief, as the notion of Alcyone as a central sun, their mention is of doubtful propriety.

At times the author's poetic temperament is dominant, or a desire to be vivid carries him away. "About ten minutes before totality, the darkness begins to be felt" (p. 148) is certainly figurative, while the following clause in the sentence

is a plain statement in regard to the light. "The suddenness with which the darkness pounces upon the observer is startling" is a highly metaphorical opening to the next paragraph. It would be more appropriate for a descriptive essay, than standing isolated in a page of science.

Yet the judgment expressed at the opening of this article need not be withdrawn. *Lessons in Astronomy*, is, on the whole, admirable. It would serve for those beyond school age who desire to know something of the present state of astronomic science and who lack time or preparation for more exhaustive discussion, a capital purpose. It is a good book to read as well as to study.

OREN ROOT.

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Zoological Articles Contributed to the "Encyclopedia Britannica."—By E. RAY LANKESTER. To which are added Kindred Articles by W. JOHNSON SOLLAS, LUDWIG VON GRAFF, A. A. W. HUBRECHT, A. G. BOURNE, W. A. HERDMAN. New York: Charles Scribner's Sons, 1891, pp. vii, 195.

The last edition of the Encyclopedia Britannica is a rich mine of original information in which are buried many articles that may escape the attention of students who are apt to expect in cyclopedic repertories only second-hand summaries of what may be known on given subjects. A number of excellent articles in zoölogical topics by masters in their departments are therein to be found, such as those on Amphibia by Huxley, on Mammalia by Flower, on Birds by Newton, and others on various invertebrate groups. The greater portion of those relative to the lower groups have been selected and combined in a volume printed with few corrections from the original stereotype plates and issued with an introduction as a separate publication. The collection embraces articles on the (1) Protozoa (1885), (3) Hydrozoa (1881), (7) Mollusca (1883), (8) Polyzoa (1885), and (9) Vertebrata (1888), by the eminent Professor, late of University College (London), and now deputy Linacre Professor at Oxford, on the (2) Sponges (1887), by Prof. Sollas, on the (4) Planarians (1885), by Prof. von Graff; on the (5) Nemertines (1884), by Prof. Hubrecht; on the (6) Rotifera (1886), by Prof. Bourne, and on the (10) Tunicata (1888), by Prof. Herdman. The dates of original publication of these articles are not given in the work and are here supplied; the

sequence of articles indicated before each name is independent of date of publication, and of authors, and is in accordance with the ideas of the principal author. The dates of publication are to be especially considered in consulting the various articles, for great progress has been made in knowledge of most of the groups treated, and consequently the volume in no case represents the present condition of our knowledge of the class considered. Most of them were brought well up to the time of their original appearance, and the authors of all were well qualified for their tasks, and sometimes the most eminent authorities on their specialties. Differences of opinion as to morphological and systematic questions exist, and the authors themselves would more or less modify their opinions, and indeed in several cases have done so, since the original publication of the articles in question ; with this caution, the articles may be allowed to speak for themselves. More might be said respecting the longest (pp. 95–158) and in some respects most important of the series, that by Prof. Lankester on the " Mollusca."

The mollusks and especially their shells have long been the subjects of extensive study. Nevertheless Prof. Lankester found it necessary or at least advisable to introduce many new terms in his discussion of their morphology—some because the previously used terms for the same structures had a too vague or general meaning and others because they had been unduly extended and denoted false homologies. While some will think that most of the new terms are unnecessary, it is our belief that several supply a need for morphological philosophy. The sections on the " general characters of the mollusca " and the " schematic mollusk " bring together much sound information on molluscous organization, but it must be noted that there are various exceptions to the generalizations ; on the whole, however, the sections are well worthy of study and generally embody the latest phase of knowledge at the time of publication. The section including the " systematic review of the classes and orders of mollusca " is entitled to less consideration. In fact, long before the date of publication, many of its details were antiquated and obsolete and some of the new conceptions were untenable even in the light of the evidence then available. In fact, one is compelled to conclude that while Prof. Lankester has a clear idea of the outlines of malacology, he was very deficient in knowledge of

its details. We may well believe that if he had applied his well-trained mind to such details, he would have produced the best treatise extant on the subject—but, alas, he has not done so.

But, in spite of these faults, the volume under consideration is a valuable epitome of the morphology of the groups discussed, and is illustrated by numerous admirable figures and diagrams. It will be found to be very useful for its generalities, but the pure, systematic zoölogist will be disappointed in it. One must lament, too, that no index is furnished with the volume.

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Physical and Political School Atlas. A Series of Eighty Maps, with General Index.—By J. G. BARTHOLOMEW, F. R. G. S. London and New York: Macmillan & Co., 1891, pp. 102.

Good books punctuate the advancing thought in good teaching. The educational strides of the past five decades are best measured by a comparison of the school books of the earlier and later parts of the century. For example, the imperative demand for greater stress in objective representation in the schoolrooms has flooded the country with school books that accentuate the objective side of teaching. The measure of school books and school studies is ever changing.

A number of years ago Green, the historian, wrote: "No drearier tasks can be set for the worst of criminals than the studying of a set of geographical text-books such as the children of our schools are doomed to use." That eminent authority would not have written so to-day with a copy of Macmillan's School Atlas lying before him. The day for only memorizing empiric statements in geography has passed away; the scientific spirit is everywhere at hand. The labors of Ritter in Germany, Reclus in France, Geikie in England, and Guyot in America, are crowning the closing century with the scientific geographical spirit.

Entirely in accord with the spirit of the times, and teeming with the latest scientific researches, Macmillan's School Atlas by Bartholomew comprises within a single cover fifty-eight maps of physical, political, and descriptive geography. The author and publisher have united in making it one of the most attractive of school books. I may be considered an

optimist, but I cannot refrain from saying that it is a book filled with excellences. Space forbids a full enumeration of its merits, and restricts attention to a few of the more prominent features. The material is abundant and well represented; in practical utility the work is suggestive of the schoolroom rather than of the study; the number and kind of maps will aid greatly in comparative geographical study which is so often neglected in the schoolroom on account of the lack of sufficient data at hand. The series of maps on the British Isles is especially adapted to interesting class work along historical, political, and commercial lines. A common fault in map-making, namely, that of crowding too much into one map, has been carefully avoided. Multiplicity of details in a map tends to mystify the learner. In Macmillan's Atlas whole maps are devoted to showing definitely single things. For instance, the maps of railroad and steamship routes in connection with specified distances between depots of international commerce and specifications of principal products are stamped with a clearness that cannot fail to impress itself.

On the same page as the maps of the leading countries of the world are found maps of England or Wales drawn on the same scale, thus enabling the child at a glance to approximate more closely the actual size of a country. The coloring of the physical maps is particularly appropriate to the design, and the etymological table of derivation of the names of leading places in the world is at once suggestive and practical. Whether judged by the representation of the latest and best results in political, commercial, and scientific investigation, by the practical needs of the schoolroom, or by the attractiveness of every page, the book merits and will receive wide attention.

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Colloquial German. A Drill-book in Conversation for School-Classes or Self-Instruction, with a Vocabulary and a Summary of Grammar.—By THOMAS BERTRAND BRONSON, A. M., Michigan Military Academy. New York: Henry Holt & Co, 1891, pp. vii, 147.

Key to the Exercises in Colloquial German.—The same, pp. 43.

Educational specialization results in separation of textbooks into categories of either science or simplicity. But artistic simplicity may express scientific conception and treatment.

Professor Bronson's book is a good example of this, and of judicious combination of natural method dependent for value upon the personality of the teacher, and grammatical grounding by acquisition of a vocabulary and mastery of the fundamental principles of German expression. There is no development by "inductive method," nor even arrangement of exercises gradatim. These cover the various circumstances and exigencies of travel and European life, terms, shopping, and sight-seeing. Thus practically useful abroad, they furnish corresponding idioms at home. No sentence is cast in the antique mold of the history of the "baker-boy's bread." Its crispness and brightness, added to its value as an instructor and in case of actual Continental trips, sufficiently excuse the author for adding another volume to the already laden table of grammars and introductory manuals.

The second third of the book consists of a vocabulary containing "many words of everyday use not found in most works of this kind," a good proof of colloquial and up-to-date value. I gladly notice that the French influence is recognized by the presence of a large number of words which illustrate the pronounced and constantly increasing introduction of the French element into German speech and literature—a tendency which the foolish rescript of a youthful Emperor, ignorant of his political bearings, was unable to check. A list of the text's irregular verbs precedes the "Summary of Grammar." However this list appeal to the lover of Black-letter, or suggest a Bismarck dynasty's irreconcilableness with modern demands of time and type, I suggest, in consonance with the rest of the book, and where especially every artificial aid is desirable for this grammatical crux of the beginner, a simpler, larger, and perhaps Roman typography.

In the grammar proper, I find admirable compression and clearness of statement. The classification of nouns is a simplification of that in Whitney's grammar, upon which it seems based. The rules for gender are equally concise. Those on adjectives, comparison, pronouns, numerals (Sections 14–21) need illustrations. A good teacher may amplify in the schoolroom, but the scholar studies alone, and should have principles exemplified. Neglect of this reduces grammar too much to mere rules. It would also seem better to make the rules for compound tenses precede the conjugation of such tenses even in the auxiliaries.

On the other hand, the presentation, so difficult on a simple basis, of the complexity of a German phrase, in the "order of words," cases, tenses, moods, is admirable. Here, mastery of the examples attached will fix forms firmly and avoid future difficulty, by furnishing clear standards. Experience has, however, led me to believe that numerical subdivision of the parts of the sentence, with laws of flexible position assigned to each, in some such manner as scheduled in Näf, pp. 38, 83, is the most vivid statement for the beginner. A clear and closing enunciation robs Grimm's law of its terrors.

Official spelling, capital typography (particularly in Exercises and Vocabulary), flexible covers, complete this little proof of and aid to scholarly fitness, in which I notice a few slips: Exercise 30, 13, beats for beets, and in Key: 32, 24, l lacking in zahlbar; 33, 15, parenthesis incomplete. On the hypothesis that the Key may be placed in the pupil's hands for comparison, I suggest: altered rendering for purposes of accuracy, in either Exercises or Key, to make exact correspondence, of 5, 18 (können); 12, 13 (tense); 27, 17 (Geben); in 34, 11 (und zu kurz), and 34, 18, 35, 4, 35, 29 (sehr) are superfluous; so, 36, 8 (noch), 37, 2 (heute abend), 38, 10 (aller), 41, 24 (will you), do not agree; nor can we resist protesting against 28, 17, in the English part, "tasted *excellent*" and 41, 17, "very *tasty*." But without these changes, the book is a model in its field.

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Eight Books of Cæsar's Gallic War.—By WILLIAM RAINEY HARPER, Ph. D., and HERBERT CUSHING TOLMAN, Ph. D. New York: American Book Company, 1891, pp. viii, 502.

Lovers of Cæsar, whether as students or as teachers, who believe that the principles of modern pedagogy may be fully applied in the teaching of the classics, have reason to welcome this volume and the series to which it belongs, as worthy of a place among that rapidly increasing group of text-books that may be called excellent—an interesting, helpful, and stimulating book for teachers and students alike. One brings to the examination of Harper's *Cæsar* all the interest that is naturally inspired by the work of one who has fairly earned the reputation of being one of America's greatest teachers; and a careful study of the conception and the execution of the work reveals little cause for disappointment.

The conception of this book is as admirable as it is unique, and in this fact alone may be found ample justification for its existence. In the general introduction are found the life of Cæsar, an estimate of Cæsar's literary style, a history of Gaul, Germany, and Britain, a sketch of the Roman art of war, and an account of the religious system of the Gauls and Britons. Completeness and unity are thus favored. References to the Grammar are placed beneath the text, where they ought to be; the excellent "topics for study" follow each chapter; the maps, pictures, and plans of battles, are all to be found in the text. The notes are thus rendered homogeneous. This concentration is in sharp contrast to the distracting features of "Taylorism." The indication in the text of new words by full-faced type is an excellent device; especially for those who begin Cæsar with the "Gallia est omnis," and the examples of inductive studies, according to the methods that have been used by Dr. Harper with such signal success in the teaching of the Oriental languages, as well as of Latin and Greek, are rich in suggestiveness. The word-lists, both in Latin and in English, containing in convenient order those words of which a knowledge is necessary for any satisfactory reading of the text; the indication of the vocabulary value of each word; the indexes of geographical and proper names, and the special vocabulary to Book VIII; the exercises in Latin composition, not only based upon selected chapters of the text, but also serving to illustrate certain principles of the grammar—all excellent features—will serve to indicate further the completeness of plan which characterizes the whole work

The execution is, in general, as careful as the plan is excellent. The entire fifty pages of the general introduction are characterized by the vivid and entertaining quality that belongs to all of the work that Professor Harper performs or inspires. The inductive studies, the word-lists, and the classification of words as to conjugation and formation, evince much painstaking labor. The notes are stimulating and helpful, and, with few exceptions, excellent. Their brevity is a marked feature. They abound in references to such writers as Ennius, Plautus, Lucretius, etc., etc.; and they are especially rich in discussions, not without a touch of erudition, of the genesis of constructions. Of explanations touching the story of Cæsar almost nothing is given. The entire absence of notes and references upon the last four books would seem to detract materially

from the worth of this edition of Cæsar, were it not for the fact that this omission might well prove to be the occasion for introducing students to Gildersleeve, through his masterly "Fifth Book"—an experience that could not fail to be at once a delight and a revelation.

One may be pardoned, in the case of such a book as this, for calling attention to several points that might make it better: the use of *ne-statue* to represent *ne-statueret*, and of *ipse* (*teneam*) to represent *ipse* (*teneret*) chapter XX, p. 52; the translation of *animos*, p. 326; *fieret*, p. 331; *faciendum curat*, p. 333; the decided lack of flavor noticeable in many of the exercises in Latin composition in cases where they are neither English nor Latin, and where the sins against rhetoric are numerous enough to warrant mention. Drill in translation of idiomatic English into idiomatic Latin is certainly a desideratum; and it would seem that the substitution of paratactic arrangement for the more unwieldy sentences, the analysis of some of the ablatives absolute, and a closer observance of the law of sequence of tenses in English, would favor the attainment of this result through these exercises.

The *Cæsar* of Harper and Tolman is, as it stands, one of the best answers that has ever been made to objections urged against the humanities; for here is the treating of the text as a true object of scientific study; with the scientific spirit and with the scientific method; the same demand for observation, the same scope for generalization, and the same prompting to original research, among the words, thoughts, and actions of Cæsar as may be found in any other field of scientific inquiry.

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VIII.

EDITORIAL.

The controversy between Mr. Francis E. Abbot of Cambridge, Mass., and Professor Josiah Royce of Harvard University, is the literary *cause célèbre* of the year. Mr. Abbot objects to a review of his work, *The Way out of Agnosticism*, that Professor Royce published about a year ago in a prominent philosophical journal. The facts in the case may be gathered from the somewhat acrimonious correspondence on the subject that has appeared in the columns of *The Nation*. Besides much that is only personal and local in Mr. Abbot's attack on Professor Royce, there is one point that is of wider significance and that should not be permitted to pass unnoticed. University professors, who have not had their attention called to the matter, will be surprised and amused to find Mr. Abbot assailing their *Lehrfreiheit*. He appeals to the Corporation and Overseers of Harvard University, whom he designates "the employer," against the literary expressions on a technical point of their "employee," and hints that the academic disciplining of Professor Royce would be grateful to him. This sort of thing is expected from the political partisan and the religious fanatic, but not from a student and teacher of philosophy in this day and generation. The chair of philosophy must be as untrammeled as the chair of mathematics or the chair of physics, and the occupant is responsible to no one for his scientific judgment and opinions. Morever, Corporations and Boards of Trustees do not constitute colleges and universities. They simply hold the purse-strings and appoint the staff of instruction; and in many institutions the latter function is more nominal than real. By no stretch of the imagination can a financial and supervisory board, particularly of a university that owes allegiance to no political party or religious sect, be held to have any control over the professional opinions of the professors. Mr. Abbot has mistaken the century. As for Professor Royce, his well-known reputation as a thinker and teacher needs neither comment nor defense.

Criticism of a different sort is being directed at an equally well-known teacher in another field. A member of the Cook County (Illinois) Board of Education—Mr. Charles S. Thornton—has presented a report to his colleagues that severely arraigns Colonel Francis W. Parker's administration of the Cook County Normal School. The writer is very definite and precise in his statements and in his array of evidence in support of them. His report has an appearance of candor that lends it weight. On the other hand, there seems to be a tone of concealed hostility to Colonel Parker in it, and the fact that it has been widely circulated by the author arouses one's suspicions that its apparent fairness is not real. Some of the practices that Mr. Thornton describes are, if true, not in good taste, but they do not imply educational inefficiency by any means. A school may celebrate its principal's birthday, and still be a good school.

The main charge brought by Mr. Thornton is that the work of the pupils is desultory and careless, and their habits idle and inattentive. Examples of work done in composition, arithmetic, and geography are cited in support of the statement. Mr. Thornton goes even further. He writes: "The failure of the pupils is marked upon the very work said to be done in this school. They have no clear and definite ideas, even upon the topics supposed to be especially studied in this school, and they do not possess the habits of mental action which will enable them to investigate new subjects. They could not represent in thought the forms they had molded in geography, the boxes they were asked to construct, the conditions of the problems they were to solve, or the things which they had heard, seen, and read. They could not point out likenesses in the continents they had studied again and again. . . . . To ask people to support a school simply because it claims to give some mysterious, indefinable, unexplainable power, which forever strangely fails to manifest itself, savors rather too much of Madame Blavatsky for the modern spirit of scientific investigation." This is strong language, and coming from a public official it will have an undoubted influence, unless it can be shown to be inspired by malice or ignorance. Colonel Parker's name and reputation are very dear to thousands of American teachers, and they have faith to believe that he will meet these new criticisms satisfactorily.

The annual report of President Low of Columbia follows closely upon that of President Adams of Cornell, which was discussed last month. The main impression left by President Low's survey of the year is that a long step forward has been taken toward creating a metropolitan university of the first rank. The famous College of Physicians and Surgeons, which for many years has been in nominal connection with Columbia, now enters the university on an equality with the other faculties, and sends representatives to the University Council. The teaching of law has been raised from the semi-popular plane of the apprenticeship system to that of the scientific and really university study of jurisprudence; and the retirement of the veteran and honored professor of law, Theodore W. Dwight, has been made the occasion of a complete reorganization of the law faculty. The Union Theological Seminary, which is one of the very few institutions in this country where theology is studied scientifically, has also entered the university, though in an indirect way and one which does not affect its separate endowments or its separate board of trustees. The new Da Costa professor of biology, Mr. Henry Fairfield Osborn, is also to be curator of mammalian paleontology in the American Museum of Natural History, and the professors of botany, chemistry, and geology are to be permanent members of the board of control of the new botanical garden for which provision is being made.

All of this is very significant, and will be so recognized by the country at large. New York, from its very size and importance, has become the seat of many educational institutions of more than doubtful character and value. That its real representative before the world should be a large and strong university, free from all sectarian bias or control, is a postulate. Columbia, inspired by a new energy, can and will, if liberally supported by the wealth and intelligence of the community, reach such a position in the near future. Its two hundred and twenty officers of instruction and seventeen hundred students—over thirty per cent. of whom have already had a college education or its equivalent—constitute an army in themselves. It goes without saying that if private generosity and large-mindedness will do in America what government aid does in Europe, New York will one day rank with Berlin, Paris, and Vienna as a great university city.

Superintendent Sabin of Iowa has completed his programme for the February meeting of the Department of Superintendence, and it is of a character to attract a large attendance of superintendents and college teachers. The topics to be considered are the rural school problem, the public library in its relations to pupils and to workingmen, the duty of the State toward children of kindergarten age in large cities, the means to accomplish more work in the ordinary school period, the teaching of history and literature in grammar grades, the function of the State university. An important paper on this last-named topic is expected from President Angell of the University of Michigan. Dr. Selim H. Peabody is to speak upon the Educational Exhibit at the Chicago Exposition, and Commissioner Harris will open a discussion on the educational congresses planned for the same time. The Comenius celebration will, as already announced, form part of the programme, and there will be an evening devoted to manual training in the lower grades.

The Brooklyn Board of Education has recently adopted a measure with regard to the licensing of teachers that cannot fail in time to increase the efficiency of the teaching force. Hitherto, under the regulations of the Board, the lowest grade of certificate has been granted to those who passed an examination in scholarship, and in scholarship alone. No knowledge of principles of education and methods of teaching, no professional training, no experience in teaching, has been required. It is true that the certificate thus granted was good only for a year's trial, and might be canceled at the end of a year, in case the holder's work was not satisfactory; it is true that the possession of this temporary certificate entitled the holder to a year's training in the city training school for teachers; but it is also true that comparatively few of the licentiates sought the professional work of the training school, and that the great majority of the teachers appointed in the primary grades had neither experience nor training. So long as would-be teachers could obtain positions even at the lowest rate of remuneration, the majority of them failed to realize the necessity for professional training. Thus it came to pass that each year the ranks of the teachers were recruited chiefly by persons of fair scholarship indeed, but without professional train-

ing or experience, and that the work of primary teaching was, in large measure, in the hands of apprentices. In future, however, all this is to be changed. The new rules require that, hereafter, licenses of the lowest grade, good for one year's trial, shall be issued only to those who, in addition to passing the superintendent's examination in scholarship, present evidence of successful experience in teaching, or who graduate from a training school. Those who have not had the required experience before taking the examination in scholarship, and who do not care to attend the city training school, may obtain it by rendering substitute service in the city schools; but in all cases the work must be satisfactory to the city superintendent before even the license entitling the holder to a year's regular employment as a class-teacher is issued. Thus three great safeguards against the entrance of ignorance and inefficiency into the schools have been established: a searching examination in scholarship, the testing of capacity to teach by substitute work or in the city training school, and a final test during the first year of regular appointment. The plan is far from perfect—it is a combination of the cadet system of Chicago and the training-school system of Boston—but it is so far in advance of previous methods that the action of the local Board of Education is certainly worthy of high commendation. As its adoption was accompanied by a substantial increase in salaries, it is not unfair to assume that Brooklyn has realized this truth—high scholastic and professional attainments may, by chance, be obtained under a low schedule of salaries; they can be insured only under one that is high.

The time has almost passed when it will be possible to change in any essential particular the arrangements for the Columbian Exposition at Chicago, and yet no adequate provision has been made for Education. Agriculture, horticulture, viticulture; machinery, electrical appliances, and mining; every conceivable means of producing material wealth—all are amply provided for. Huge buildings are to be erected in honor of the various departments of the nation's material progress; millions of dollars are to be expended in glorifying Wealth. But one whole side of our country's life, that marvelously active and complex educational organism that stretches from the kindergarten to the university, is simply

classed as "liberal art" and stowed away in a corner. Apparently the loud protests of the teachers are to go unheeded, and no proper representation of Education is to be permitted. It is difficult to understand—or would be, unless so many other things in connection with the proposed Exposition were difficult to understand—why so unintelligent and short-sighted a policy should have prevailed. It will certainly deprive the great fair of a feature that would attract tens of thousands of visitors, as well as give a most unfair and one-sided view of the interests of the people of the United States.